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POPULAR Computing WEEKLY

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Vol 3 No 32

Oric runs into trouble

ORIC Products International — manufacturers of the Atmos computer — has run into cash-flow problems

The company has cancelled all its advertising in the UK for the Autumn and has been threatened with legal action by Pan book publishers over outstanding debts

"Oric has switched its advertising to France, Germany and Italy for the Christmas run-up," commented an Oric spokesman. "The UK market has been quieter than ever this year, and we will be concentrating on the European market."

This move has caused concern over Oric's position, not least at Prism, which distributes the Oric Atmos machine "We are currently in negotiations with Oric about the decision," said Prism's Terry Cartwright. "It is slightly worrying, as when we took on the Oric contract, we understood that

continued on page 5 ▶

Thames goes soft

THAMES Television is negotiating with DK'tronics to develop computer games based on its successful TV programmes like *Minder* and *The Sweeney*

"No details have yet been finalised, but we are experimenting with various characters on screen, to ensure that they will be satisfactorily represented in the finished game," said Nick Jones, Thames' publishing manager.

"While we are dealing with DK'tronics at the moment, it is too early to say yet whether it will be an exclusive deal to produce games for any particular shows.

"While programmes like *Minder*, *The Sweeney* and so on seem obvious candidates for a computer game, we have not settled exactly which will be used.

"We will probably be using more than one machine — launching the games on one and then converting. The Spectrum, Commodore and BBC are all 'DK'tronics territory', so we wouldn't be too restricted."

Thames are also planning to merchandise TV shows to be used for educational computer material. Programmes such as *Rainbow* are under consideration. "We are interested in anything that proves a worthwhile extension of our material," Nick continued. He hopes that the first Thames computer titles will be available in time for Christmas. "Because of the Christmas peak, we are aware that there is some urgency to finalise the deal."

This will not be the first such deal in which Thames has been involved. Thorn EMI has already acquired a licence to develop the character of Dangermouse for the micro, and a *Dangermouse* game should be available this Autumn. "The deal with Dangermouse is slightly different in that it is a cartoon character, and is much more straightforward to convert to the computer," said Nick. "With mainstream entertainment programmes using real people we need to be more careful with characterisation."



George Cole and Dennis Waterman in a scene from *Minder*

However, the idea of using ITV programmes as a basis for computer games has already been taken up by Central TV,

continued on page 5 ▶

Sierra's UK debut

SOFTWARE Projects, of *Manic Miner* and *Jet Set Willy* fame, is the latest company to bring American games over to the UK.

It has concluded a licensing agreement with Sierra — publishers of the successful US adventure *Kings Quest* — to convert its Apple, Atari and

continued on page 5 ▶

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)View

Giant strides in programming and home computer graphics have meant that software authors are now attempting effects that only a few years ago would have been unthinkable

The primitive graphics of micros like the ZX81 originally proved limiting and most software houses began by writing copies of existing, successful arcade games — *Defender*, *Scramble* and many others

More recently it has become fashionable to base games on an established character. Think of almost any cartoon figure and it will now be licensed to a particular software house. Sierra has the Disney characters Adventure International has the Marvel comic heroes. Even Snoopy has succumbed.

Just a few years ago there wouldn't have been any point in licensing Goofy. It's a bit tricky to produce something that is recognisable as Disney's number one dog within an eight by eight pixel square.

Home micro software has come on far enough that such things are now possible — really big chunky sprites and striking graphics — and cartoon characters were the first to be picked up because they lent themselves to a computer graphics adaptation.

Now software houses are beginning to go a stage further by licensing non-cartoon characters. These present entirely different types of conversion problems. First attempts — with *ET*, *007* and even *Dr Who* — have not been promising. Now Thames is looking at video games based on series like *Minder*.

The gulf between people's perception of characters like *Minder's* Arthur Daly and the kind of effects possible with computer graphics must present a great new challenge for the software author

POPULAR Computing WEEKLY Vol 3 No 32

)Presents...

)Futures...

Enveloping on the BBC ... Build your own RS232 interface for the Spectrum ... QL microdrive utility ... and Star Game is *Alien Raid* — with streamers, swarmers and mutants — for the 48K Spectrum.

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ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

CTA Magazine of the Year 1984

Sierra's UK debut

◀ continued from page 1

IBM games for popular British micros.

"The negotiations were to convert for the Spectrum," said Colin Stokes of Software Projects "However, the first release will be *B C Quest for Tires*, which is already available for the Commodore 64, so we hope to have that ready soon on both cassette and disc "

B C Quest for Tires concerns a caveman's journey through the Stone Age on the wheel be has just invented and will cost £9 95 on cassette and £11.95 on disc



Software Projects is also involved in similar negotiations with other top US software houses, although on details are yet available

The company has also gained a licence to produce a home micro version of the CVS arcade game *Hunchback at the Olympics*. The game was originated by the now-defunct Century Electronics and CVS — being founded by ex-Century boss David Jones — took it over

● Sierra is currently working on a strategy game based on the TV series *The Prisoner* In the game the player will assume the role of Number 6, the central character, and must find the wey to leave the island where the prisoner is being held. *The Prisoner* should be released in the US early next year, and according to Sierra's vice president Bob Schneider, once it has been established in the States, it will be made available in Britain.

Oric

◀ continued from page 1

they would keep up their promotion levels and we are now looking very closely at our sales forecast for the Oric."

The outstanding debt to Pan is for the publishing of the Oric Atmos manual. Last week Pan were said to be on the verge of serving a writ against Oric for non-payment "The dispute with Pan books is being settled amicably," continued the Oric spokesman. "There is no suggestion of any court action."

A spokesman for Pan declined to comment on the situation, other than to deny that the dispute had been settled, and to state that previously published figures for the debt of between £100,000 and £120 000 were overestimated.

Oric has also been in talks with the printers, Leagrave Press in Luton over debts outstanding since March.

New MD at Atari

ATARI'S new UK managing director will be David Harris, former Commodore International sales and marketing director

Harris is will in the US and the exact date of his arrival in Britain to take up the appointment has not yet been decided.

Under new management from former Commodore chief Jack Tramiel, the UK branch of Atari has been renamed Atari Corporation UK.

Imagine debts top £1m

DEBTS at the failed Liverpool software house Imagine amount to more than £1m, a meeting of creditors has been told.

Liverpool chartered accountant Arthur Young, McClelland, Moores and Co were appointed liquidators at the meeting, held on August 2.

In addition to the £630,000 owed to trade creditors — including £250 000 to Marshall Cavendish — Imagine owes £100,000 to its bank, Lloyds of Water Street, and about £350,000 in wates, holiday pay, National Insurance and VAT

It transpired from the meeting that the value of Imagine's assets is not yet known. It is also unclear whether the company's Megagames are included in its assets after Imagine directors Mark Butler, Dave Lawson and Ian Hetherington formed a separate company called Finchspeed, and a contract was agreed handing over the Megagames contract to Finchspeed.

Judith Austin, of the Official Receiver's Office in Liverpool, said. "The Megagames are included in Imagine's assets, subject to an agreement still to be sorted out."

Top games for MSX

THORN EMI will be setting up distribution for the forthcoming MSX machines on a grand scale

Forty five top-selling titles from the UK's major software companies will be available from Thorn-EMI in 'starter packs' with twenty different games in each.

Henry Kitchen, Thorn's marketing accounting manager, explained. "We have firm agreements to distribute many of the top selling games — *Atic Atac* and *Sabre Wulf* from Ultimate, *Snooker* from Visions, A & F's *Chuckie Egg*, *Cavelon* and *Hunchback* from Ocean, *Fred* and *Boogaboo* from Quicksilva are all included.

"We intended to have three different packs to send retailers, so obviously some games will find themselves in more than one

"Once companies realised Thorn-EMI were making a firm commitment with MSX, they were only too happy to come to an agreement.

MSX games is distributed by Thorn EMI should be available in mid-September — at the same time as the launch of the first MSX machine from Toshiba.

Individual software titles will be priced between £7 and £8

Return to sender

THE first Sinclair QL customers are now being invited to send their machines back to Sinclair for a 'Rom refit'.

The first QLs were sent out with 'dongle' Eproms plugged into the Rom socket Sinclair has undertaken to refit these machines free of charge, and return the QLs within 10 days

"We are staggering the return of the QLs so that those who received them first will get them refitted first," said a Sinclair spokesman, "If all goes smoothly, we hope to have all the refits completed by the end of August."

Those customers with the FB or PM SuperBasic variants are also being asked to return their four software application packages Sinclair will send back compatible replacements for the upgraded machine.

Sinclair is still making improvements to SuperBasic — JM being the latest version. Machines deliverd in the last week contain this new variant. "JM is largely the same as AH but with some small improvements," the spokesman continued.

Languages currently under development for the QL include Pascal, C, 68000 Assembler, Micro APL and BCPL.



● Sinclair may have to delay its promised 1985 share flotation because estimated profits of £25m for the year now ended are now not expected to be achieved.

Thames

◀ continued from page 1

who commissioned Tynesoft Computer Software to produce *Auf Wiedersehen Pet*, a strategy game for Spectrum, Commodore 64 and BBC, which involves building a brick wall, and getting safely home from the Bierkeller Other Central programmes are also due to appear as computer games before Christmas.



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Letters

Once upon a time . . .

I notice in your *Book Ends* section in the July 26 issue that you refer to the Babani books which have been well known to radio amateurs and the like for almost half a century

You may be interested to learn that book No 161 — which cost me 3/6 (old money) about twenty-five years ago and deals with radio and electronics data — shows the general series editor to be none other than ... guess who? Clive Sinclair

R A Davis
39 Boxley Drive
West Bridgford
Notts NG2 7GQ

Subjective reviewing

Simon Mills judging by his letter to *PCW* (July 26), is labouring under a misapprehension regarding a reviewer's duties

Reviewing is, necessarily, a *subjective* art, and the resulting reviews have to be approached as such by the reader, who should always add a mental "In my opinion' at the start of each review To paraphrase Owen, "all a reviewer can do today is warn"

As the originator of the *Hobbit* review quoted by Simon I am very aware that phrases such as the one he holds up for examination are the rocks upon which the reviewer's craft can easily founder — how many times have you read those immortal words "The ultimate in Spectrum/CBM etc graphics"? But words like these are not meant for disinterment — the next week will surely bring some even better example of Spectrum/CBM or whatever, graphics

However, I stand by the *Hobbit* quote It was *at the time* the adventure to judge others by It was also the adventure that brought that type of game to a much wider audience Nowhere in the original review did I say that all ensuing programs would have to include graphics (and I have many times indicated a personal preference for the old boring' text-only kind of adventure) — only that adventure writers could see what was possible and use *The Hobbit* as their yardstick.

Tony Bridge

Marketing puzzle

First my congratulations on keeping ahead of the field in so-far as the QL is concerned. Your program listings, I have found invaluable Despite the claims of one computer monthly magazine you are at least a lap ahead.

I have had my QL for a month now It is one of, I imagine, the last sent out with the Dongle attachment. I wait for a call to return it for fitment of internal Rom Of the machine itself I have nothing but praise, I had previously owned ZX81 and Spectrum with microdrive, and ordered before application forms were available

The appalling QL manual has cost me many wasted hours. Its conception is excellent, but the multitude of mistakes which should have been found by any proof-reader with a knowledge of Basic, ruined it completely Errors ranged from the use of lower-case key-words as variables (that did take a little figuring out initially, particularly as the idea of DAY$ as a Key-word had never entered my head) to lines listed in the wrong order, lines missed, and even consecutive lines with the same line number I understand that a re-write has been done I cannot receive it too soon

Attempts to get some sense from chaos by writing to Sinclair have met with a standardised letter telling me to join QLUB Naturally, I had not become a member as ordering pre order form I didn't know of its existence But finding myself with a second QL on order when I filled in an order form and sent it off with a careful note not to duplicate the previous order and having put down QLUB on that order form, I'm scared of confusing the issue even more

I have spent most of my working life in marketing, not business machinery or home-appliances mind you, and find the Sinclair marketing strategy very puzzling It says very little for MENSA.

Wil Jackson
131 Denton
Malden Crescent
London NW1

Must be a nice little earner

Getting away with murder

When I bought my home computer eighteen months ago I knew absolutely nothing about computers. As such I was at the mercy of the person selling me the machine

Fortunately, I ended up with a Sinclair Spectrum which has served me well ever since. However, now I know a good deal more about computers I realise that much of the advertising of home computers is, to say the least, misleading Indeed, computer manufacturers seem to get away with murder

How a complete novice manages to select the correct machine for his/her needs baffles me Take for example the memory size of computers. My Spectrum 48K has about 43K available Ram for programming The Commodore 64 has 39K available Of course, the Commodore has superior graphics and sound but where in the advertising is the actual available memory mentioned? Instead we are just told it has a 'massive memory' To a first time buyer it seems logical to assume that you can do more programming on a 64K computer than on one that has a mere 48K. In this case, not so

Recent events with the QL have caused me to wonder if any other industry could get away with it!

A recent consumer report came to the conclusion that the home computer industry had a long way to go in improving its standards in advertising and customer service Buying a computer is a mine-field for first time buyers And jargon,, clever but misleading advertising and often inexperienced shop staff make this task even more difficult.

Neil Bathurst,
21 Cowleymoor Road,
Tiverton,
Devon

House of cards

Since imitation is the sincerest form of flattery — and many of us brought a computer to learn — why don't more software authors spend less time concealing their programs from copying and alteration and more time making their techniques available to the rest of us so the quality of programs written by the hobbyist can rise

After all, there are laws to penalise people *profiting* from copying software and they are enforced.

These software houses! Many of them are turning out to be 'house of cards' Impressive cars, salaries and adverts, but of little substance.

Chris Sawford
145 Bryncyn
Pentwyn
Cardiff

Support the Electron

After owning an Acorn Electron for almost a year, I am somewhat distressed at the lack of support magazines and software houses are giving it

It beats the Commodore 64 on language and graphics and I believe it is currently the third best seller

Yet people don't seem to be taking advantage of the enormous potential offered by Acorn's winner

Nicholas Haighey
(a lonely Electron owner)
80 Parkdale Road
Sheldon
Birmingham


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The Stow

It's a dog's life. Greyhound racing at *The Stow* by Dave Taylor-Wadsworth

The Stow — slang for Walthamstow Dog Stadium in North East London — is the setting for this week's game.

The program uses the Sprite facility of the Commodore 64 to present the greyhounds. There are six dogs and up to four players are asked to bet on them from a £100 float they each have to start. The minimum stake is £10 and if your funds drop below £10 you are out of the game. During the play there is an on-screen reminder of which dog you have selected.

Program notes

0-8	Sets up sprites
10-38	Preparation routines for the game bets, dogs etc
80-92	The on-screen graphics routine
100-140	The main game loop
230-238	End of game options
300-312	Instructions
1000-1003	Data for sprites

Variables used

PL	— Number of players
D	— The dog currently being bet on
B	— The bet
M	— The money remaining
N$	— Player name

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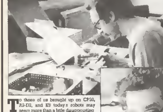
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130 [illegible] THEN [illegible]
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[illegible] THEN [illegible]
200 PRINT [illegible] ****************************
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201 FORT=1T022 PRINT *
* NE [illegible]
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********* PRINTCHR$ 14
[illegible] PRINT [illegible] HAVE ALL RUN OUT OF [illegible]
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[illegible] PRESS [illegible] END PROG
[illegible] FOR NEW GAME
[illegible] THE [illegible]
[illegible] THENRUN
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[illegible] PRINT [illegible] ****************************
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[illegible] FOR [illegible] =1T022 PRINT *
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1003 DATA [illegible]
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Down to zero

***Christina Erskine** talks to Robin Bradbeer about Intergalactic Robots and other such things*



To those of us brought up on C3P0, R2-D2, and K9 today's robots may seem more than a little disappointing.

Robin Bradbeer — who has been in the industry longer than most (he edited the Spectrum manual among other things) thinks the first product from his new robotics company *Zero* could change all that.

"It is extremely easy to build robot arms and turtles" he points out, "but making robots which actually do something is another matter altogether."

Robin first became interested in robotics some three years ago while running a computer club at North London Polytechnic. One member, Dave Buckley, now a co-director of the new company — IGR — had studied the subject, and his enthusiasm was infectious.

"Around Christmas 1982, Dave began work on designing and manufacturing his own robot rather than just playing with them," said Robin. "A month later I was over at CES in Las Vegas where Androbot's two robots *Bob* and *Topo* were launched. It struck me that robots could be more than just a hobby — they could be big business — and it seemed that many people were largely in the dark on the subject."

The pair decided to jump in with both feet, and left their jobs at North London Poly to go full-time into robot manufacture. The first robot, *Zeaker* was praised in a review in *Practical Electronics*, and Colne Robotics subsequently agreed to manufacture *Zeaker* under licence. "Our company, Intergalactic Robots, was formed a year ago and shortened to IGR almost immediately," Robin continued.

"A number of projects suggested themselves to us straightaway, but at the moment we are only going ahead with a couple. We have bought back the rights to *Zeaker* from Colne, and have redesigned it. It's now called *Zeaker 1*, and will be relaunched in kit form — sometime in the New Year.

"Then we have our new product coming out in October — *Zero 2*, which will be available in both kit and ready built form."

"Zero stands for Zeaker Educational Robot, but it's a quite different type of robot, from the *Zeaker*.

"*Zero 2* is aimed at home rather than school use, and while it is basically a box that moves around and bumps into things, it has huge possibilities for expansion and development.

"It is designed to interface with the Spectrum, Commodore and BBC B computers, using an RS232 port and has been particularly designed to interface directly to the language Logo. It is just possible that it may be sold in a package with Sinclair *Logo* although that plan is still in the pipeline.

"However it will also operate with Sinclair and BBC Microprolog, Comal for the Commodore, and QDOS — plugging straight into the back of the QL."

The robot's own assembly language, Zero Control Language (ZCL) will give it a basic understanding of simple commands and will look the same on any micro. One ZCL tape will be supplied with each machine bought. *Zero 2* also has turtle capabilities with a motor-driven pen clipping to the exterior.

"The pen has two distinct advantages over other turtle-type robots," Robin explained. "Firstly, we did a lot of market research in schools to find out what people would want from a robot. While the ability to use turtle graphics was popular, the usual difficulty with changing pens was definitely unpopular. With Zero 2, the pen needs only to unclipped, and a new one clipped on. Having it driven by motor rather than solenoid, also means that something other than a pen could be clipped in, and driven by the robot, for instance, a 'grabber' or 'fork-lift truck' type mechanism.

"On the expansion side, our immediate plans are for a speech synthesiser, and a short range infra-red sensor, so that you can do away with the cord between the robot and the micro. We're hoping that other companies will take on the job of manufacturing other add-ons. If they don't, I suppose we'll have to resort to publishing ideas in magazines."

The magazines may well turn out to be Robin's own — another project for the New Year is to establish a robotics magazine, probably to be called *Droidsmiths*. As a one-time editor of *Educational Computing*, and involved in the launch of *Computer and Video Games* and *Sinclair Projects*, this is hardly a new departure for him.

"People shouldn't be frightened off by the idea of owning a robot. Our basic philosophy is to assure people that they are in control, and to encourage the idea that robots use first be used as toys.

"For instance there are ways to extend conventional-style computer games to use *Zero 2*. You could, say, build a maze from bricks and guide the robot through it via the keyboard, then program it to go through itself, and feed the information back to the screen.

"Eventually, you could have two robots playing *Pacman*, or jousting with each other in the maze.

"I expect that about 80 per cent of people who buy *Zero 2* will simply use it for fun, another 15 per cent may tinker with the software while the remainder will get out the soldering iron and re-build it."

For the last categories, Robin has a *Zero 3* in mind. "It will be a buggy-type robot, aimed at the serious user, which we intend to be especially useful for research and development purposes."

Zero 2 will be available in October this year. Ready-built versions, have a target price of around £100 while the kits will cost between £70 and £80.


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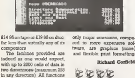
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Reviews

Financial

Program *Autocalc 64* **Price** £14 95 **Micro** Commodore 64 **Supplier** Richard Shepherd Software, Elm House, 23-25 Elmaholt Lane, Slough

Spreadsheet programs tend to be one of the most expensive items of software that most micro owners are likely to buy So *Autocalc 64* from Richard Shepherd Software is an interesting new release, since it costs only



£14 95 on tape or £19 95 on disc far less than virtually any of its competitors

The facilities provided are indeed as one would expect, with up to 2000 cells of data in two dimensions (maximum 255 in any direction) All functions on the spreadsheet are invoked by pressing the *F1* key, which puts you in command mode You can then enter a one-letter command, followed by further information if prompted This procedure must be followed, for example, to enter data, text or a formula into a cell, to recalculate the spreadsheet, to control its format, to replicate cells, etc This process is a bit tedious for data entry, but works OK for the other functions.

At the price, this program offers very good value The only major omissions, compared to more expensive software, are graphics (none) and flexible print formatting.

Richard Corfield

Rubies

Program *Sultans Maze* **Micro** Amstrad CPC464 **Price** £7 95 **Supplier** Amsoft, Brentwood House, 165 Kings Road, Essex.

Sultan's Maze is a *Hunt the Wumpus* style maze game for the new Amstrad machine.

All you need to know about the plot is that the Sultan's six rubies are now scattered about Hampton Court, guarded by the ghost of the Sultan's companion now known as the Guardian. Like the mercenary idiot you are you have decided enter the maze and try to remove the rubies.

Sultans Maze is a good 3D maze game which is very simple to play and requires thought, rather than fast reflexes, though it is difficult to win on the highest of the nine levels

The numeric keypad is used for control of your position, rotate, move forward, etc as well as keys to view the map, pick-up and drop rubies and so on. As you move around you get tired, but, by returning to the palace you can be refreshed.

The program is written in Basic which results in the drawing of the clear 3D views not being instantaneous but this doesn't detract from the game Comprehensive, though slightly long winded instructions are available on loading

The game has some very nice touches, for example, the ability to jump through the hedges on the lower levels, and the way in which you can orientate yourself by looking at the sky

Greg Pearson

Wham Bam

Program *Star Striker* **Micro** BBC B **Price** £7 95 **Supplier** Superior Software, Regent Street, Skinner Lane, Leeds LS7 1AX.

Wham bam action again from Superior — and great fun too.

You control a three-stage rocket and each section has to fight its own series of battles before joining to the others. You get something of the shooting action of *Galaxian*-type games and the delicate control of a lunar-lander as you coax the separate stages together

The nose-cone fires single bullets against swarms of pretty butterfly aliens. After a shot or two these turn into ravening beasties that are much harder to hit. Various coloured meanies are zonked ... then come such extra terrors as hurtling asteroids which zoom at you extremely fast and some peculiarly nasty fireballs that drip venom viciously and suddenly

What addicted me to this game was the second stage rocket which fires two bullets at once. That doesn't sound very special but it's the touch of genius that hooks you. It is very satisfying to blast pairs of aliens at once rather than relying on lonely single shots

Dave Watterson

Self-satisfied

Program *Hi Bouncer* **Micro** BBC B **Price** £6 95 **Supplier** Mirrorsoft, Holborn Circus, London EC1

The Mr Men bounce into colourful arcade action in this bright and breezy Mirrorsoft offering

Roger Hargreaves's cheerful characters give their special appeal to a game that is tricky enough to satisfy everyone but not too hard to frustrate fairly young children.

There are in fact two games — the main one and a practice session which is slower but not much easier The screens are colourful, the music very good and the action outstanding Mr Bouncy is your man and he has to adopt different tactics on each of four main games.

The printed instructions are slightly misleading on the first round — unusual for this range — but you'll soon get the hang of it Youngsters will certainly love it but this isn't a tiny tots program — adults beware, it's harder than it looks

The real test is to see if it can capture the lovable nature of the Mr Men. It does that with excellent animation and a series of little touches like the self-satisfied smile of Mr Bouncy each time he succeeds

Dave Watterson

Bo Peep

Price £8.95 **Micro** Commodore 64 **Supplier** Jolly Rogers Software, 19 Castleron Avenue, Barnhurst, Bexleyheath, Kent.

My First Adventure from Jolly Rogers Software is, as the name implies, an introduction to adventure games for children. As such it has a simple structure in which you can make your way round the countryside via woods, streams, cottages and fields. On the way you meet various nursery rhyme characters, like Little Bo Peep, Old Mother Hubbard, etc

The game is primarily text based, and the commands follow the usual pattern, eg, *Look East* or *Get Shoe*. However, one major omission is a glossary function to find out what words the program will understand. This leads to a certain amount of guesswork when typing in the commands. Fortunately if an invalid response is given, the program replies with a suitable message and lets you try again. As well as the text, there are some simple block graphics pictures to illustrate a few of the locations. These are quite nicely done, and certainly add to the visual interest.

This a very simple adventure, with quite a small number of locations and not many objects and other characters to worry about. These factors, plus the nursery rhyme theme, make it suitable for very young children. However, older children will quickly complete the game, and, having completed it, there is not much point in having another go

Richard Corfield

The Hook

Program *Space Commando* **Micro** Amstrad CPC464 **Price** £8.95 **Supplier** Terminal Software, Derby House, Derby Street, Bury

Space Commando is claimed to be, and is, a "fast-action arcade style game in fantastic 3D perspective"

The object of the game is to rid the galaxy of hostile aliens. A fairly standard plot, which is improved by the ability to select which of the many aliens to attack next.

When you arrive in the selected sector of the galaxy you can see a from-the-cockpit view of the surrounding space and a background of moving stars. In the centre of the screen are your gunsights into which you must manoeuvre the aliens, using a joystick (not keyboard), which start as a dot and gradually get bigger and very detailed.

The battle isn't all one-sided, since when the aliens get close enough to you they will open fire, and any hits will decrease your limited energy resources even faster

When you have destroyed sufficient aliens you will be able to choose another type. If you are low on energy it is possible to move to a sector which contains your mothership and refuel from it.

The fast action, excellent graphics and good sound, as well as the incentive of working up through the ranks of space pilot until you become a space commando make this a very good game

Greg Pearson

Day After

Program *Ground Zero* **Micro** Spectrum 48K **Price** £6.95 **Supplier** Artic, Main Street, Brandesburton, Driffield, North Humberside.

The title of this game seemed to imply that it was a new version of *Missile Command*, but I knew this could not be. Artic already sells one reasonable version of the game. I was mystified.

Ground Zero in fact turns out to be a text adventure written with the *Quill*. Set just before a nuclear attack (the day before *The Day After*, perhaps?) you start off all alone in a house in a cul-de-sac. At least the computer keeps telling you how quiet it is, and I have yet to find any other people

So there is nothing else for it but to explore. This all works very well, as anyone familiar with the *Quill* will know — you use verb-noun commands to find your way around. There do not seem, at least so far, to be many difficult puzzles to solve — everything is fairly logical and easy. This might make it suitable for newcomers to the world of adventures, even if the theme is slightly morbid.

I am surprised though that Artic have published this — it seems somewhat below the standard of their now ancient adventure series

It is possible to produce better programs with the highly successful *Quill* adventure-building utility than this

David Lester

Routine

Program *Arena 3000* **Price** £9.95 (disc) **Micro** Commodore 64 **Supplier** Microdeal 14 Truro Rd, St Austell, Cornwall

One unusual feature distinguishes *Arena 3000* from most arcade shoot-outs. The game consists of a series of screens containing different patterns of aliens. You control a man who can move around the arena shooting the aliens. He must kill all of them before they converge on him, and thus destroy him. So far nothing new

The unusual feature is the method of controlling the movement and firing. The game can be played with either one or two joysticks. If one is used, you always fire in the direction you are facing. However, if two are used, one stick controls movement in the usual way, while the other is for firing. You fire in the direction this second stick is pointing and no button pressing is required, ie, you can move in one direction and fire in another. Although it takes a bit of getting used to, this is a very effective means of control, and it certainly makes the game faster and easier to play. Apart from this, the game is pretty routine. The graphics the controls are standard, and and sound are unexceptional. Also the patterns of play are rather repetitive, although quick reactions are needed once you get on to the more difficult screens

Richard Corfield

Arch enemy

Program *Laser Reflex* **Micro** BBC B **Price** £7.95 **Supplier** Talent Computer Systems, Curran Buildings, 101 St James Rd, Glasgow

That old arch-enemy in the computer game the 'alien invader' is back, this time trying to plunder the fuel supplies stored in silos beneath the surface of a remote asteroid refuelling base.

With a rallying cry of 'No free gas for Ganymede', which must surely rate amongst the classic war cries of modern times ('over the top', 'Banzai!' etc included), the defence of the asteroid begins.

Unlike most other common or garden invader defences, the laser does not fire vertically, but from beneath the roof of the refuelling base, the laser being deflected off a parabolic mirror to the right of the screen.

Moving the laser cannon to the left or right alters the angle at which the laser strikes the mirror and hence the direction of the beam — a new type of 'deflection-shooting' for trigger happy alien zappers to master.

In addition, the laser cannon must be moved at intervals during the game to an energy bank there to be re-charged with its laser energy — without which the beam becomes both slower and shorter.

Scoring, as ever, depends on the number of waves of alien drones successfully repelled in a game consisting of three lives, each life is lost when the aliens establish their greedy siphons on all of the four surface fuel silos. Bonus points are awarded for destroying the drones near the top of the screen.

The game can be played using either joysticks or the keyboard, with the useful option of selecting which keys control the movement of the laser cannon in the case of the latter.

Simon Wilson

Carried away

Program *Simonsoft Sprites Version Two* **Micro** BBC B **Price** £12.95 (cassette) £16.95 (disc) **Supplier** Simonsoft, 25 Tatham Road, Abingdon, Oxon OX14 1QB

More fun than *Invaders*, more compulsive than adventuring, faster than a speeding zargon, able to leap tall buildings at a bound. I'm totally carried away by Simon Reynolds's *Sprites Version Two* package.

Sprites are graphics figures or shapes which are defined once then can be flown all over the screen at great speed. With this package they may either follow pre set paths or be under control led from a Basic program. You use make a Supersprite which is up to 24 × 24 pixels compared with the usual 7 × 8 pixels. You can also enlarge both ordinary and Supersprites up to 8 times! Add in a collision detection system and you have the basis of umpteen arcade games.

Simonsoft's program allows up to 48 sprites — 12 different ones with up to 3 copies of each. Supersprites take up the places allotted to more than one basic sprite. The routines to drive them come in a set of twenty machine-code programs and you use only the one which has the facilities you need for your purpose — thus saving memory in your program. Also included is a library of useful sprite designs and two simple, sample games to show off how to use the sprites.

My only quibble is that the sixteen-page booklet which accompanies the package spends so much time raving about the super powers of the program it does not fully explain how to use it.

Nonetheless finding out is fascinating and totally absorbing. Use it for designing your own games, an animated title page or a display. You'll have to be dragged away from the machine.

Dave Watterson

Surrealist

Program *Panorama (H)* **Price** £17.95 **Micro** Commodore 64 **Supplier** Talent Computer Systems Freepost, Glasgow

Although the Commodore 64 is capable of high resolution graphics, it is difficult and tedious to build up detailed pictures in hi-res mode, even if you have one of the many Basic extenders which provide graphics commands. *Panorama (H)* is a utility from Talent Computer Systems which overcomes this limitation. It provides a straightforward means of producing coloured sketches in standard hi-res mode, ie, 320 x 200 pixels with two colours per 8 x 8 cell.

The system has two main screens — the drawing screen and the menu. The menu lists all the available commands. These are codes of one or two characters, and they enable you to perform the functions required for drawing and colouring your picture. Commands include those for plotting points, drawing lines, circles and ellipses, setting the colours, defining blocks of texture, filling areas with colour, moving or inverting areas, saving and restoring your picture, and many others. On the drawing screen you can control the cursor by joystick or keyboard, and all the commands work here as well as via the menu.

Many nice features are included in this package, such as defining up to four colour schemes for each picture, and enlarging a portion of your sketch — very useful for detailed work. Altogether, this is a professionally presented utility, simple and quick to use which provides virtually all the facilities required for the creation and storage of hi-res pictures. The striking and surrealist demo picture, which comes on the same tape, shows what impressive results can be achieved.

Richard Corfield

Prestel route

Hardware *BBC Prestel Adaptor* **Micro** BBC B **Price** £113.85 **Supplier** Acorn Computers

Each year in the relatively brief lifespan of the home computing age has had its particular craze or fashion. This year the predominant feature — mice and other furry friends notwithstanding — has to be communications

A micro without its own modem is somehow lacking

As ever, third party manufacturers have latched on to this fact in droves and the BBC B was one of the first machines to benefit from the new add ons After all, a micro used so widely in schools, and also marketed as a 'serious' business computer, was a natural target. And, again as ever BBC's own manufacturer Acorn was well behind in the race to produce its own modem.

Now, however, the Acorn Prestel Adaptor is here and, despite its belated appearance, looks likely to prove a highly attractive add-on for users who want a reliable way of logging on to and making the most of the British Telecom databases.

Unfortunately this modem will *only* cope with Prestel and, after reconfiguring, the Telecom business service BT Gold. It only operates at 1200/75 baud so anyone also wanting to access any of the bulletin boards which operate on 300/300 baud will have either to get another add-on or try one the handful of modems designed to cope with multi-baud rates

Connecting it up to the micro is relatively simple unless, like me, you have used other modems For some reason the Acorn RS432 interface has to be plugged in exactly the opposite way round to all other models, I have tried.

Once connected, with the Prestel Rom in your micro and the modem switched on with its BT jack in the appropriate socket, the opening screen gives you a summary, along the bottom lines, of the available options via the function keys. This can be called on screen at any time during operation. Logging on to Prestel simply involves keying in the telephone number and letting the adaptor dial it and link up for you. You can key in special characters for pauses between figures, but I found no problem in simply typing in the number alone Prestel (and/or Micronet 800) members will then be asked to key in their passwords and can enter the database

Of course any modem should get you this far, although this system is a great deal more convenient than having to plug a telephone into the modem itself. But it is in the facilities available while using Prestel that the Acorn machine really scores

The most obvious of these additional facilities is in the ever-sensitive area of down-loading software, a major attraction to home micro users. Not once in a lengthy series of down-loading programs over the review period was there any hitch in the proceedings. On screen instructions were always crystal clear and programs loaded, saved to disc and ran perfectly every time This is not, sadly, a general rule when down-loading software.

One of the other major attractions of the Prestel system is its 'mailbox' facility which allows users to send messages to each other These can range from straight forward text, to the use of different colours and varieties of text, to a complex set of available graphics. Using the function keys, the Prestel software enables relatively easy use of the colour and graphics in mailboxes and via an 'edit frame' facility, makes it possible to design a complex mailbox whilst still off line (and therefore not running up a massive phone bill) It also allows the saving and loading of individual screens or 'frames' from the database.

If like me you need to do quite a bit of experimenting before you can get the right effect with graphics, these facilities are invaluable. Unfortunately, unlike the infallible software for down-loading, I couldn't get the off-line screen editor to work properly Frames appeared to be saved perfectly happily, but calling them back on-screen, using the apparently fool-proof instructions in the manual, proved a task beyond my powers. Perhaps just an individual quirk in the adaptor, or even my micro, but an annoying one

That apart, my relationship with the Prestel adaptor was a wholly friendly one and much attention has been paid to making the on screen prompts as idiot-proof as possible.

When the frame loading and editing facilities work properly it is also possible to use the *Macro* function for your own reprogramming, for example, by instructing the *Help* key to give special prompts on particular areas

In all, a package well worth considering for any BBC user wanting to go the Prestel route, but not having a 300 baud facility could — depending on what you want to do — prove a drawback

Barbara Conway



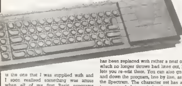
Rom wasn't built in a day

Taking another look **Andrew Pennell** compares the present AH and JM version QLs with the previous FB and PM variants.

The QL's somewhat premature launch forced the release into the world of SuperBasic version FB, which was incredibly bug-ridden.

Considering the machine arrived some four months late, there was obviously insufficient time to test the Basic and the job was left to customers. To see which version you have, type *Print Ver$* The original was FB, then PM, and the latest and final (for the moment) versions are AH and JM. The weird names are initials of certain members of Sinclair staff.

The first version of SuperBasic FB



is the one that I was supplied with and I soon realised something was amiss when all of my first Basic programs kept crashing the machine Only after a lot of trial and error, and pressing *Reset*, did the causes make themselves apparent. Phoning Sinclair to try and get a list of known bugs produced the response "there is something wrong with *Beep*", but nothing else To aid those who also have FB machines, here is a list of all the bugs subsequently corrected in later versions, so they can be avoided.

String variables — referencing an undefined string will crash the machine, eg *Print x$(2)*

Local variables — in functions these tend not to work producing strange values and local *For* loops can crash the machine

SDate — if any parameters are undefined the machine will crash

Call — if any parameter is a string it will crash

Arithmetic — *Print* −2−2 gives 0 instead of −4, and so does any power of 2 Also, creating large numbers can crash it.

Network — the network will not communicate with a Spectrum.

Beep — apparently one of the parameters doesn't do anything — I don't know any more

Unfortunately, the latest version, AH, whilst being a considerable improvement, still suffers from some other bugs

Variables — an array cannot be the same name as another variable

Trying to read ZX cartridges will crash the machine

Pressing *Ctrl Alt 7* will lock it up

In addition, the *At* command works differently on different QLs Version AH works as stated in the manual, but FB requires its parameters the other way around.

That said, AH is a big step forward. As well as correcting most of the bugs, AH machines operate rather differently The terrible line editor in the earliest machines has been replaced with rather a neat one, which no longer throws bad lines out, but lets you re-edit them. You can also go up and down the program, line by line, as on the Spectrum. The character set has also been extended, to include all sorts of foreign characters, and even a few graphics all accessible from the keyboard. The Microdrive code has also been altered, but I'm not sure to what effect

The opportunity to add extra features when the AH version was written was not fully taken up as the very terse error messages have not been extended. Despite being described by David Karlin — the machine's hardware designer — as "helpful", the error messages are just as unilluminating in AH as they are in FB The worst is "error in expression", which covers around seven different types of error, making debugging very frustrating AH also prints up messages while programs actually run, such as "*Procs/Fn* cleared", and "bad or changed medium" The meaning of these is not documented.

The present manual is beset by a considerable number of misprints, with precious few of the listings correctly typeset. It is also inaccurate and misleading in places but it is to be revised in August Those who have a dongle hanging out of the back of their machines can hope to have them upgraded by the end of August This will take ten days

Psion's programs exist in many variants, even more than the number of versions of SuperBasic. *Quill* is still tediously slow though David Potter claims it is good considering that it is a real-time formatter." Sorry David, but the Macintosh manages to do the same but with proportional spacing on screen and different character heights, at a much faster rate and it uses the similar 68000 processor The lastest version of *Quill* that I have seen still ignores the "lines per page setting you give it, so if you haven't got 66 lines per page, well too bad! A new faster *Quill* is on the way

Updated versions of the Psion software will be available during October/November, free of charge to QLUB members The programs may also be available on a whopping Rom cartridge, but there seems to be some confusion about when this may become available

Multi-tasking on the QL is still shrouded in mystery, as it cannot be done from Basic I can see from the system tables how it should be possible, but doing it in practice has proved impossible so far

There seems no possible justification for the non-standard joystick sockets

It seems Sinclair has as much difficulty finding plugs to fit the QLs weird sockets as everyone else.

I have yet to use a QL satisfactorily with a colour television. After warming up, the colour signal goes and only constant retuning can get it back so I don't bother any more The QL is also incompatible with many makes of monitor because the video signal does not conform to the industry standard. Its all very well to use a non-standard video socket, but a non standard signal too! Some monitors do work though, namely Sanyo ones, as shown on the Sinclair stand at Earls Court recently It would seem that Sinclair are going to put their name on someone's monitor especially for the QL, but so far I don't know whose

The list of coming peripherals is much as it was at the launch, with priority going to a 128K Ram pack and no mention of a floppy disc interface The need for a Centronics interface has disappeared since the launch of the Miracle Systems one (reviewed in June 28 issue) and other serial to parallel converters can be expected from other suppliers There is still no sign of individual QL Microdrives or the 512K Ram pack.

The inner workings of QDOS are to be published shortly but it does not seem to be intended for enthusiasts as it will cost around £25 The provisional documentation I have seen contains a wealth of information, but is written in such a way as to be as difficult to understand as possible

At last the QL is beginning to mature, and it is to be hoped that the bad publicity surrounding its launch will not lessen, to any great extent, its impact on the market

Sinclair continues to deny any development of a floppy disc interface, which would be the one product to really take the QL into the market it is aimed for

Nevertheless the AH and JM versions are a big improvement and much more the machine that everyone was talking about after its launch in January

Picture window

Looking out on another world. ***Adrian Warmen*** *— in the first of a two-part article — gives your Commodore 64 'windows'.*

One of the facilities of machines like the Lisa or Macintosh which is often taken as synonymous with mice is that of 'windows'.

Strictly, these are any number of small text or graphic screens — or windows — which exist independently of the main screen or from each other. They may seem to 'overwrite' anything displayed underneath, but when the window is removed, the underlying display is restored undamaged. The program below provides a form of primitive window facility for the standard Commodore 64 computer. It works for the text screen only, but could be adapted to work for a high-resolution screen.

Next week we will print the Basic Loader version of the program for those without an assembler. For this week — a description of the program and the first part of the assembly language listing.

The following features are implemented in the windowing program.

The standard text screen can be anywhere in memory prior to storage of a subsection of screen or before restoring; as long as the system variable Hibase (at $0288) is correctly set up. In other words if any display screen can be used from Basic, it can also be stored and updated.

Windows are stored in a 'stack' fashion, ie the last window stored will be the first retrieved.

All windows can be from any subsection of the screen, of any size. A special option for the entire screen to be stored is also provided.

The windows are stored 'behind' the Basic Roms from locations $A000 to $BFFF. This results in small loss of user-memory for storage purposes. Memory space is utilised to a maximum. Smaller windows require less storage space, and so more of them can be held.

Both character and colour data is kept.

Any attempt to store a window for which there is insufficient space will cause an error message.

Attempts to retrieve a screen when none is stored will be ignored.

To install the program once you have loaded it in, simply load and run the Basic loader program. If the loader program is incorrectly entered, and error message will be produced, otherwise the loader will stop when all the data has been correctly loaded. To activate the window facilities, perform a *SYS 49152* either in direct or program mode.

If you wish to store an entire screen, simply use *SYS 49161*.

To store a section of the screen, use the instruction *SYS 49155,x,xs,y,ys* where *x* is the column number of the left-hand side of the window, in the range 0 to 39 inclusive. The program refers to this as 'XORIG'. *xs* is the width of the window in columns, in the range 0 to 40 inclusive. A width of 0 will cause no storage. The total of *x* and *xs* must not exceed 40, or else an error will be generated. The program refers to *xs* as 'XSIZE'.

y is the row of the top side of the window, in the range 0 to 24 inclusive. The program refers to this as 'YORIG'.

And *ys* is the depth of the window in rows, in the range 0 to 25 inclusive. A depth of 0 will cause no storage. The total of *y* and *ys* must not exceed 25, or else an error will be generated. The program refers to *ys* as 'YSIZE'.

To retreive the last window stored (if any) use 'SYS 49158'. The window will be returned to its original position on the screen. See the example sub-routine to be printed in the second part.

> Printed next week — in the final part of 'Windowing on the C64' — will be the remainder of the assembly-language listing, a Basic loader version of the windowing program and a simple example program to demonstrate windowing at work.

Program Notes

1090–1190 The storage area used by the program for transferring screen data to and from. *SRC* and *VEC* are vectors for transferring data to and from the storage area. *SRC* is used to point to the screen (or colour nybble map) area, while *VEC* points to the next free location behind the Basic Roms.

1240–1260 A simple jump table to make the *SYS* command numbers easier to remember.

1270–1340 This is the command to store the entire screen. This behaves exactly as the normal store command, except that the dimensions of the window are already known. Accordingly the relevant values are set up and a jump made directly into the store routine.

1380–1420 Initialises the vector indicating the next free storage position. When first used, the vector points to the first address of the Basic Roms. At any next re-initialising will cause the end of all windows currently stored.

1440–1580 A general routine for multiplying the contents of the *Y* register by 40. The result is placed into the store called Temp for convenience.

1620–1700 On a couple of occasions, the value YORIG*XORIG needs to be found — this is the position of the top left-hand corner of the window, relative to the top left hand corner of the screen. The routine returns the position in *Temp* using the multiplication routine described above.

1740–1790 For the general purpose store routine it is necessary to find the dimensions of the window. This sub-routine will find and calculate each of the dimensions after the *SYS* command. Any value greater than 255 will immediately cause an error. Checks for the values smaller than this are made in the store routine itself.

1810 Any values out of range or an attempt to store a window for which there is insufficient space will produce an illegal value error message, using this jump instruction.

1850–1910 The store routine. Finds the XORIG of the window. Cannot exceed a value of 39.

1920–1960 Finds the XSIZE of the window. The total of XORIG and XSIZE cannot exceed 40 (the width of the screen).

1990–2020 Finds the YORIG of the window. Cannot exceed a value of 24.

2030–2060 Finds the YSIZE of the window. The total of YORIG and YSIZE cannot exceed 25 (the depth of the screen).

2070–2400 Checks to see if there is sufficient room for the new window. At present, it is not known how large the window is so a maximum size of the entire screen is assumed. If there is not enough space behind the Roms the command will abort with an error message. To estimate the storage space left, use *Print 47104– Peek (253) + 256* Peek (254)*. Each window takes up 2*(#rows*#cols)+4 locations where #rows is the number of rows in the window, and #cols is the number of columns.

```
1000 C000              *=$C000
1010 C000              '
1020 C000              ' SCREEN STORE PROGRAM.
1030 C000              '
1040 C000              ' BY A.WARMAN.
1050 C000              '
1060 C000              '
1070 C000              ' DEFINE PROGRAM VARIABLES.
1080 C000              '
1090 C000              CALC        =  $02
1100 C000              TEMP        =  $86
1110 C000              TEMPHI      =  $8C
1120 C000              XORIG       =  $F7
1130 C000              XSIZE       =  $F8
1140 C000              YORIG       =  $F9
1150 C000              YSIZE       =  $FA
1160 C000              SRC         =  $FB
1170 C000              SRCHI       =  $FC
1180 C000              VEC         =  $FD
1190 C000              VECHI       =  $FE
1200 C000              '
1210 C000              '
1220 C000              ' PROGRAM VECTORS.
1230 C000              '
1240 C000 4C1AC0 INIT         JMP START
1250 C003 4C5BC0 STOR         JMP STORE
1260 C006 4CC7C0 UPDT         JMP UPDATE
1270 C009 A900   SCRN         LDA #$00
1280 C00B 85F7                STA XORIG
1290 C00D 85F9                STA YORIG
1300 C00F A928                LDA #$28
1310 C011 85F8                STA XSIZE
1320 C013 A919                LDA #$19
1330 C015 85FA                STA YSIZE
1340 C017 4C87C0              JMP STRSCRN
1350 C01A              '
1360 C01A              ' INITIALISE PROGRAM.
1370 C01A              '
1380 C01A A900   START        LDA #$00
     ' START MEMORY VECTOR.
1390 C01C 85FD                STA VEC
```

```
1400 C01E A9A0              LDA #$A0
1410 C020 85FE              STA VECHI
1420 C022 60                RTS
1430 C023           ;
1440 C023           ; CALCULATE PRODUCT *40.
1450 C023           ;
1460 C023 8402      MULY    STY CALC
     ; MULTIPLY Y*40
1470 C025 A900              LDA #$00
1480 C027 A208              LDX #$08
1490 C029 4602      NEXT    LSR CALC
1500 C02B 9003              BCC SKIP
1510 C02D 18                CLC
1520 C02E 6928              ADC #$28
1530 C030 6A        SKIP    ROR A
1540 C031 6688              ROR TEMP
1550 C033 CA                DEX
1560 C034 D0F3              BNE NEXT
1570 C036 858C              STA TEMPHI
1580 C038 60                RTS
1590 C039           ;
1600 C039           ; FIND YORIG*40+XORIG.
1610 C039           ;
1620 C039 A4F9      POSN    LDY YORIG
1630 C03B 2023C0            JSR MULY
1640 C03E A588              LDA TEMP
1650 C040 18                CLC
1660 C041 65F7              ADC XORIG
1670 C043 8588              STA TEMP
1680 C045 9002              BCC POSNOUT
1690 C047 E68C              INC TEMPHI
1700 C049 60        POSNOUT RTS
1710 C04A           ;
1720 C04A           ; FIND VALUE.
1730 C04A           ;
1740 C04A 20FDAE    GETVAL  JSR $AEFD
     ; FIND NEXT NUMBER.
1750 C04D 209EAD            JSR $AD9E
1760 C050 20F7B7            JSR $B7F7
1770 C053 C900              CMP #$00
1780 C055 D001              BNE BADVAL
1790 C057 60                RTS
1800 C058           ;
1810 C058 4C48B2    BADVAL  JMP $B248
     ; ILLEGAL VALUE.
1820 C05B           ;
1830 C05B           ; STORE SCREEN.
1840 C05B           ;
1850 C05B 204AC0    STORE   JSR GETVAL
     ; FIND XORIG.
1860 C05E C028              CPY #$28
1870 C060 B0F6              BCS BADVAL
1880 C062 84F7              STY XORIG
1890 C064 204AC0            JSR GETVAL
     ; FIND XSIZE.
1900 C067 84F8              STY XSIZE
1910 C069 98                TYA
1920 C06A 18                CLC
1930 C06B 65F7              ADC XORIG
1940 C06D C929              CMP #$29
1950 C06F B0E7              BCS BADVAL
1960 C071 204AC0            JSR GETVAL
     FIND YORIG.
1970 C074 C019              CPY #$19
1980 C076 B0E0              BCS BADVAL
1990 C078 84F9              STY YORIG
2000 C07A 204AC0            JSR GETVAL
     ; FIND YSIZE.
2010 C07D 84FA              STY YSIZE
2020 C07F 98                TYA
2030 C080 18                CLC
2040 C081 65F9              ADC YORIG
2050 C083 C91A              CMP #$1A
2060 C085 B0D1              BCS BADVAL
2070 C087 A5FE      STRSCRN LDA VECHI
2080 C089 C988              CMP #$88
2090 C08B B0CB              BCS BADVAL
```

Everyday routines

***Jason Orbaum and Geoffrey Campbell** continue their series with a library of useful machine code routines*

There are many people who would like to write assembler programs, but who either do not want to go to all the effort of writing the code for each little routine, or simply do not know how to write some of the routines required. For this reason we're printing a 'library' of basic machine code routines common to many games and other kinds of program. Some of them will also be useful from Basic, for example the screen scrolling routines. All of them are written in fully relocatable code, and can therefore be placed anywhere in Ram, to suit the user's current requirements

To reposition any routine simply change the clear statement to point to the start address and change the *For-Next* loop by a corresponding amount in the Basic loader program (or use the ORG pseudo-op if you are working from an assembler). It is possible to have as many routines as memory permits in Ram all at once using this technique

We shall start with a few simple routines to fill the screen with a given character and invert the screen. The screen fill tmes have the A and B registers initiated, so a small machine code driver to set up the values is needed, which we will leave to your imagination! Any character can be used, and, by using character 143, the screen can be cleared. To call this routine, use something like.

```
LDA #143
LDB #143
BSR CLS
```

or, for black,

```
LDD #$8080
BSR CLS
```

The routine is as efficient as possible, using the D register to fill two screen locations at a time The first line sets up the X register to point to hex 400, the first location of the screen memory Then we come to the first part of the main loop, which stores the two characters on the screen, at the location held in the X register, and also adds two to the X register The routine then compares the X register with hex 600 which is the bottom of the screen Ram. If it is lower (Branch on Lower) then the routine branches back and fills in the next two screen locations Otherwise, it returns to the driver program.

The screen invertar works in much the same way, but the D register is first loaded from the screen positions in question, and then the A and B registers are exclusive *ORed* with 64 Some of you may have used a similar method from Basic, subtracting/added 64 and using exclusive *OR* does the same, but will also convert from inverse to normal. The routine will invert text, but you will get some funny effects with other characters! This routine can be called straight from Basic, with *Exec* 10001, or whatever start address you choose

The vertical scroll routines are similar in construction to the two previous ones, but, instead of changing the data at a location, it changes the location at which the data is stored, by loading from the address in one index register (the Y register), and storing it in the address in the other (the X register) The routines used double auto-increment and -decrement modes for the index registers These can also be called straight from Basic

Now we come to the horizontal scrolls. These are a little more difficult to understand if written in their most efficient form and have therefore been simplified. An explanation follows for the scroll left routine and the scroll right should then be easy to understand. *Loop2* involves scrolling one line of 8 characters to the left This loop is nested in *Loop1* which scrolls the last one character, and then repeats this for A lines. Note the use of the stack to conserve A and B whilst the loop continues The scrolls left and right can be called from Basic

All of these scrolls duplicate the edge line on the screen and this can then be filled with the appropriate string of characters (perhaps part of the caves in a game of *Scramble* or the next row of figures to be moved onto a spreadsheet window)

Next week Beep Zap and Bang with the best of them with Dragon machine-code sound.

```
2711             * FILL SCREEN WITH ANY
                   CHARACTER
2711             * CALL SUBROUTINE WITH
                   CHARACTER
2711             * IN BOTH A AND B REGISTERS
2711             *
2711 8E0400 CLS   LDX   #$0400
2714 ED81   LOOP  STD   ,X++
2716 8C0600       CMPX  #$0600
2719 25F9         BLO   LOOP
271B 39           RTS
271C

BASIC LOADER PROGRAM.

0 REM SCREEN FILL
5 CLEAR 200, 10000: CS=0
10 FOR N=10001 TO 10012
20 READ A$
30 A=VAL("&H"+A$)
40 POKE N,A
50 CS=CS+A
60 NEXT N
70 IF CS<>1050 THEN SOUND 1,1:PRINT
   "DATA ERROR":END
80 PRINT"ALL CORRECT":SOUND 200,1:END
90 DATA 8E,4,0,ED,81,8C,6,0,25
   F9,39,39,0
```

```
2711             *
2711             * SCREEN TEXT INVERT
2711             *
2711 8E0400 INVERT LDX  #$0400
2714 EC84   LOOP   LDD  ,X
2716 8840          EORA #$40
2718 C840          EORB #$40
271A ED81          STD  ,X++
271C 8C0600        CMPX #$0600
271F 25F3          BLO  LOOP
2721 39            RTS
2722

BASIC LOADER PROGRAM.

0 REM SCREEN TEXT INVERT
5 CLEAR 200, 10000: CS=0
10 FOR N=10001 TO 10018
20 READ A$
30 A=VAL("&H"+A$)
40 POKE N,A
50 CS=CS+A
60 NEXT N
70 IF CS[illegible]1000 THEN SOUND 1,1:PRINT"DATA
   ERROR":END
80 PRINT"ALL CORRECT":SOUND 200,1:END
90 DATA 8E,4,0,EC,84,88,40,C8,40,ED,81
   8C,6,0,25,F3,39,39,0
```

```
2711             *
2711             * SCROLL SCREEN UP
2711             *
2711 8E0400 SCROL1 LDX  #$0400
2714 108E0420      LDY  #$0420
2718 ECA1   LOOP   LDD  ,Y++
271A ED81          STD  ,X++
271C 108C0600      CMPY #$0600
2720 25F6          BLO  LOOP
2722 39            RTS
2723

BASIC LOADER PROGRAM.

0 REM SCROLL UP
5 CLEAR 200, 10000: CS=0
10 FOR N=10001 TO 10019
20 READ A$
30 A=VAL("&H"+A$)
40 POKE N,A
50 CS=CS+A
60 NEXT N
70 IF CS<>1662 THEN SOUND 1,1:PRINT
   "DATA ERROR":END
80 PRINT"ALL CORRECT":SOUND 200,1:END
90 DATA 8E,4,0,10,8E,4,20,EC,A1,ED,81
   10,8C,6,0,25,F6,[illegible]
```



```
BASIC LOADER PROGRAM

0 REM SCROLL DOWN
5 CLEAR 200 10000 CS=0
10 FOR N=10001 TO 10019
20 READ A$
30 A=VAL("&H"+A$)
40 POKE N A
50 CS=CS+A
60 NEXT N
70 IF CS 1922 THEN SOUND 1 1 PRINT
   "DATA ERROR " END
80 PRINT"ALL CORRECT" SOUND 200 1 END
90 DATA 8E 6 22 10 8E 6 2 EF A3 ED A4
   10 8C 3 FE 22 F6 39 0
```

```
BASIC LOADER PROGRAM

0 REM SCROLL RIGHT
5 CLEAR 200 10000 CS=0
10 FOR N=10001 TO 10037
20 READ A$
30 A=VAL("&H"+A$)
40 POKE N A
50 CS=CS+A
60 NEXT N
70 IF CS 3730 THEN SOUND 1 1 PRINT
   "DATA ERROR " END
80 PRINT"ALL CORRECT" SOUND 200 1 END
90 DATA 8E 11 8E 4 1F 10 8E,4,1E C6,F 44
   6 EC A1 ED 83 3A 6 5A
100 DATA 76 F5 E6 A3 E7 A3 30 88 40 31 A8
   40 4A 26 E6 39 39 0
```

```
BASIC LOADER PROGRAM

0 REM SCROLL LEFT
5 CLEAR 200 10000 CS=0
10 FOR N=10001 TO 10031
20 READ A$
30 A=VAL("&H"+A$)
40 POKE N A
50 CS=CS+A
60 NEXT N
70 IF CS 3140 THEN SOUND 1 1 PRINT
   "DATA ERROR " END
80 PRINT"ALL CORRECT" SOUND 200 1 END
90 DATA 8E 10 8E 4 0 10 8E 4 1 C6 F 34
   6 EC A1 ED A1 35 6 5A
100 DATA 26,F5 E6 A1 E7 81,4A 26 EC
   39 39 0
```

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The last chapter

*The fifth and final part of **Alan Macdonald's** machine-code adventure writing series*

This week sees the final part of our adventure writing What I have tried to present you with is a 'skeleton program which you can use to write your own adventures around This week's assembler listing is divided up into two parts.
1) The cassette and *Quit* routines
2) Routines which deal with our 'mini' adventure.

Saving and Loading
Most adventure games have cassette routines, I find it rather sad and frustrating when no facilities are offered for saving a game on to cassette There are several ways of saving data on to cassette the first is to write your own cassette routine The second, and the easiest, is to call the Rom.

Basically what we want to do is save the important variables on to tape In fact, the only variables that need to be saved are the ones from X to EXE, the length of the code is therefore 36 bytes long The following machine code routine saves a headerless block of code on to tape

```
SAVE  LD IX,X      IX register holds the base
                   address of the base
      LD DE,36     , DE register pair holds the
                   length of the block.
      LD A,255     , indicates a block of code.
      CALL#04C2    Call the SA-Bytes routine held
                   in ROM.
```

If you haven't already noticed, the assembler I have used *Devpac3* (from Hisoft) uses a # number sign (hash) to indicate a HEX number rather than the usual 04C2h. If you do not already own an assembler then I can fully recommend *Devpac* The package also contains an excellent Monitor

Note For further details on the Spectrum Rom, you should consider trying Dr Ian Logan's and Dr Frank O'Hara's *Complete Rom disassembly* published by Melbourne House.

To reload the code we use the following routine.

```
LOAD  SCF          , set the carry flag indicates
                   Load (rather than verify)
      LD IX,X      , again IX holds the start of the
                   Code
      LD DE,36     , and again DE holds the length
                   of the block
      LD A,255     indicates a block of code.
      CALL#0556    , Call the LD-Bytes routine from
                   ROM.
```

If you study this week's assembly listing you will find a routine called *Quit*. This routine simply asks the player if s/he wants another go If the reply is 'N' then the computer resets.

Note: When you write your own adventures you should always leave behind a little password which allows you to return back to Basic In the adventure game I have designed it so that pressing B <enter> causes this to happen.

Routines which deal with our 'mini' adventure.
When you write your own adventure game it's important that the program you write is bug-free. All that's left for us to do now is write the routines which deal specifically with the 'mini' adventure

The routines are as follows
1) Turn the torch on.
2) Turn the torch off.
3) Fill the bottle of water
4) Unlock the grate
5) Go through the grate
6) Catch the bird.
7) Release the bird.

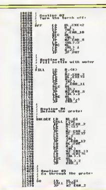
The assembly listing shows how each routine is written. The following section will try to explain, what things need to be considered for each routine

Turn the torch on.
When the player tries to switch the torch on the following questions or conditions must be met.
1) Do you have the torch? If no, print 'You don't have it'
2) Is the torch already on? If yes, print 'it's already on.
Turn the torch off.
Does the player have it?
Is it already on?
Fill the bottle with water
Is the player at the location where the pool of water is?
Does the player have the bottle?
Is it already full?
Unlock the grate.
Is the player at the location which contains the grate?
Is the grate already open?
Does the player have the keys?
Go through the grate
Is the player at the location which contains the grate?
Is the grate open?
Catch the bird.
Is the player at the location which contains the bird?
Has the bird already been caught?
Does the player have the cage?
Does the player have the rod? (remember the bird is scared of the rod.)
Release the bird.
Is the player at the location which contains the snake?
Does the player have the bird in the cage?

As you can see it's very important that every possibility is considered, otherwise you will be left with silly anomalies in your program A classic example of this must be the rope hanging from the tree in Artic's adventure A. When the player has the flint and is at the location which contains the tree it is possible to
Player — Use flint
Computer — A rope falls to the ground
Player — Use flint
Computer — A rope falls to the ground (sic)
Ditto . (forever!)

```
;
; Save game to tape!
;
SAVE    LD   A,12
        CALL PRINT
        LD   A,204
        LD   (23611),A
PAUSE   LD   A,(23611)
        CP   204
        JR   Z,PAUSE
S_BYTE  LD   IX,X
        LD   DE,36
        LD   A,255
        CALL 04C2
        JP   PLOE
;
; Load game from tape!
;
LOAD    LD   A,12
        CALL PRINT
        LD   A,204
        LD   (23611),A
PAUSE1  LD   A,(23611)
        CP   204
        JR   Z,PAUSE1
L_BYTE  SCF
        LD   IX,X
        LD   DE,36
        LD   A,255
        CALL 0556
        JP   PLOE
SCORE   LD   A,17
        JP   JP_OUT
;
; Quit routine!
;
QUIT    LD   A,13
        RST  16
```

```
        LD   A,11
        CALL PRINT
PAUSE2  LD   A,204
        LD   (23611),A
LOOP2B  LD   A,(23611)
        CP   204
        JR   Z,LOOP2B
        LD   A,(23560)
        CP   [illegible]
        JP   Z,START
        CP   "N"
        JR   Z,0
        JP   PAUSE2
;
;
; The following routines
; deal only with this
; adventure game.
; When you write your
; own adventures the
; following routines
; will need to be totaly
; rewritten
;
;
; Routine #1
; Turn the torch on!
;
ON      LD   HL,ERR+1
        LD   A,(HL)
        CP   (HL)
        JP   Z,ERR_9
        INC  HL
        CP   (HL)
        JP   NZ,ERR_8
        LD   (HL),[illegible]
        DEC  HL
        LD   (HL),-1
        LD   A,[illegible]
        JP   JP_OUT
```



```
;
; Routine 02
; Turn the torch off:
;
;
OFF     LD      HL,EXE+2
        LD      A,1
        CP      (HL)
        JP      Z,ERR_10
        DEC     HL
        CP      (HL)
        JP      NZ,ERR_8
        LD      (HL),3
        INC     HL
        LD      (HL),1
        LD      A,22
        JP      JP_OUT
;
;
; Routine 03
; Fill bottle with water
;
;
FILL    LD      A,(X)
        CP      2
        JP      NZ,ERR_2
        LD      HL,EXE+4
        LD      A,1
        CP      (HL)
        JP      Z,ERR_11
        DEC     HL
        CP      (HL)
        JP      NZ,ERR_8
        LD      (HL),3
        INC     HL
        LD      (HL),1
        JP      ERR_1
;
;
; Routine 04
; Unlock the grate:
;
;
UNLOCK  LD      HL,01
        CALL    FIVE
        JP      NZ,ERR_2
        LD      A,(X)
        CP      3
        JP      NZ,ERR_2
        LD      HL,EXE+7
        LD      A,2
        CP      (HL)
        JP      Z,ERR_12
        LD      HL,EXE
        LD      A,1
        CP      (HL)
        JP      NZ,ERR_13
        LD      HL,EXE+6
        LD      (HL),1
        INC     HL
        LD      (HL),2
        JP      ERR_1
;
;
; Routine 05
; Go through the grate:
;
;
GO      LD      HL,01
        CALL    FIVE
        JP      NZ,ERR_2
        LD      A,(X)
        CP      3
        JP      NZ,ERR_2
        LD      HL,EXE+6
        LD      A,2
        CP      (HL)
        JP      Z,ERR_12
        LD      A,11
        LD      (X),A
        LD      A,1
        CALL    PRINT
        JP      PISC
;
;
; Routine 06
; Catch the bird:
;
;
CATC    LD      HL,07
        CALL    FIVE
        JP      NZ,ERR_2
        LD      A,(X)
        CP      8
        JP      NZ,ERR_2
        LD      HL,EXE+10
        LD      A,2
        CP      (HL)
        JP      Z,ERR_2
        LD      HL,EXE+9
        LD      A,1
        CP      (HL)
        JP      Z,ERR_15
        DEC     HL
        CP      (HL)
        JP      NZ,ERR_16
        LD      (HL),3
        INC     HL
        INC     HL
        LD      (HL),2
        INC     HL
        LD      (HL),1
        JP      ERR_1
;
;
; Routine 07
; Release the bird
;
;
RELE    LD      HL,02
        CALL    FIVE
        JP      NZ,ERR_2
        LD      A,(X)
        CP      5
        JP      NZ,ERR_2
        LD      HL,EXE+12
        LD      A,2
        CP      (HL)
        JP      NZ,ERR_2
        DEC     HL
        LD      A,1
        CP      (HL)
        JP      NZ,ERR_2
        LD      (HL),2
        INC     HL
        LD      (HL),3
        INC     HL
        LD      (HL),0
        LD      HL,EXE+8
        LD      (HL),1
        LD      A,38
        JP      JP_OUT
```

Finishing touches

Christopher Bowerman presents the second part of his sophisticated designer program for the BBC.

Last week we looked at how to operate the *Paintbox* program to create pictures and designs. This week, to conclude, looks in more detail at the program itself, and the procedures which make the main program flexible and easy to amend, if you wish.

Paintbox has been used by young children and adults alike, none of whom were computerholics — the system was designed to be fun and easy to use perhaps within schools. The program runs in only 6K, the main program may look impenetable and not readily changeable — but because of the use of Procedures it should be easy to extend.

Part one sets up the function keys to have the following ascii values, f0=128, f1=130, f2=131, f3=132, f4=136, f5=134, f6=135, f7=133, f8=138, f9=137 *Procbgnd* puts the *Mode 7* Teletext codes for back and foreground down the side of the screen and protects the screen against *Cls* and scrolls with a text window

In part two line 10 sets up variables, and line 20 returns to the start prompt contained in *Procgrab* when *Escape* is hit *Procinit* sets up screen windows *Procgrab* prompts the user to set up the system, load and save screens or will let the computer set up the system (colours, area and paint density etc).

The infinite loop at line 40 is then entered. *Proccursor* flashes the cursor with *Procf* and gets the ascii value of a key from the buffer Depending on the ascii value of the key received a certain Procedure will be called or certain parameters will be altered (ie, the cursor shift position if a cursor control was hit) *Proccursor* then ends and *Procfill* is then called, which checks to see if the back and foreground colours are the same If they are, the state of flag f is checked. If f is true (−1) no drawing using the brushes takes place and the cursor can move without affecting the display. Otherwise drawing will take place with the brushes.

To add a function to the program a letter will have to be chosen as the command for the new function. For example "W" could be used to call a function to write text at the cursor position. "W" has an ascii value of 87 and if the variable C in *Proccursor* was equal to 87 then a *Proc* (which you had added) then the following line in *Proccursor* would call this *Proc* when "W" was pressed. *If* C = 87 *Then Proctext-write. Goto* 150 A list of *Procedures* (list 1) and variables (list 2) follows to help you alter the program to your own requirements.

Fig.1 Procedures

PROCname	Called by	Function
PROC START	M	move cursor to (X,Y) posn.
PROC CUL	G	change background/foreground colours
PROC ADEN	L	change brush size + paint density
PROC S	start prompt S	save screen to tape
PROC LOAD	start prompt L	load screen from tape
PROC POLY	P	draw polygon
PROC T	T	trace a line
PROC E	fkey 6	change between dotted/solid lines
PROC I	I	grid and parallel line drawing
PROC R	R	repeat line
PROC A	fkey 3	triangle area-fill

Fig 2. Variables

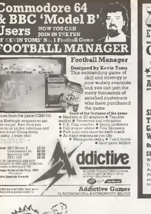
Name	Purpose
F G	current cursor (X,Y) position
U	foreground colour mode of plot in *PROCCUL*
SS	current foreground colour
C	current background colour
BR	if False (0) paintbrush, if True (1) airbrush in use
Q%	full-face polygons or take note of R% setting
R%	horizontal/vertical polygons
E%	dotted/solid lines used in line-drawing (*PROCT* etc)
T% array	last 3 positions visited by triangle-fill
M	background GCOL made outside *PROCUL*
A	brush area (paint brush and airbrush)
D	airbrush paint density
M	foreground GCOL mode
C	ascii value of key hit
R	polygon radius
Z%	polygon routine — solid polygons or wire-outlines
P and Q	limits used to set paint and airbrush size

```
220IF G<0?3 G=0 ELSE IF G>0 G=1/..5
230*FX15
240ENDPROC
250DEFPROCFILL:IF F<-1 AND C<128 OR E
NDPROC ELSE IF F>-1 AND C<124 OR ENDPRO
C ELSE IF F< 1 AND C<0 AND S=4 ENDPROC
260IFA<0 A=10
270IFB<0 B=10
280I=A*S:S=(L+2) 2:H=S/2:P F-L/2:B=G
1/2:IF BR=0 PROCRPUSH:ENDPROC ELSE PROC
[illegible]:ENDPROC
290DEFPROCSPRAY:FOR I=1 TO S STEP N X
=RND(L):Y=RND(L):PLOT69,P+X,Q+Y:NEXT:EN
DPROC
300DEFPROCBRUSH:MOVEP,Q:MOVEP+L,Q:PLO
T85,P+L,Q+L:MOVEP,Q+L:PLOT85,P,Q:ENDPRO
C
310DEFPROCSAVE:*SAVE P 3000 7FFF
320V% OPENOUT"A":PRINT#V%,n,c:CLOSE#V
%:ENDPROC

330DEFPROCLOAD:CLS:*LOAD""3000
340V%=OPENIN"A":INPUT#V%,n,c:CLOSE#V%
:ENDPROC
350DEFPROCPOLY:LOCALA,R:INPUT"Fill/Ds
ra"A$:IF A$="F" Z%=85 ELSE Z%=[illegible]
360INPUT"SIDES,R"A,R:B=2*PI/A:X=P:Y=G
:GCOLU,c:PLOTZ%-4,X,Y:PLOTZ%+4,X,Y:GCOL
U,BS:FOR C=0 TO 2*PI+B STEP B
370IF Z%=0 PLOTZ%+1,COS(C)*R,SIN(C)*R
ELSE IF Z%=0 PLOTZ%+1,COS(C)*R/2,SIN(C
)*R ELSE IF Z%= [illegible] PLOT,X+1,COS(C)*R,SIN
(C)*R/2
380IF A$ [illegible] F PLOTZ%-5,X,Y
390NEXT:ENDPROC
400DEFPROCF:FORJ%=0TO1 [illegible] GCOLJ,3:MOVEF
2,0 2:MOVEF+2,0-[illegible] PLOT85,F 2 C+2:PLOT8
5,F+2,G+2:NEXT:GCOLU,BS:ENDPROC
410DEFPROCI:A%=F:D%=G:F%=1:PLOT69,A%,
D%:REPEAT:PROCCURSOR:UNTIL C=13:E%=1:D%
D:GCOLU,BS:MOVEA%,B%:PLOTE%+5,A%,D%:ENDP
ROC
420DEFPROCE:IF E%=0 E%=16 ELSE E%=0:E
NDPROC
430PROCCURSOR:ENDPROC
440DEFPROCI:X%=F C%:T% 0-B%
450A%=A%+X%:B%=B%+Y%:C%=C%+X%:D%=D%+Y%
Z:MOVEA%,B%:PLOTE%+5,C%,D%:IF GET 32 GO
TO450 ELSE ENDPROC
460DEFPROCR:F=A%:G=D%:PROCI:ENDPROC
470DEFPROCA:T%(1,1)=F:T%(1,2)=G:FORI%
=2TO3 PLOT69,F,G:REPEAT:PROCCURSOR:UNTI
L C=13:T%(I%,1)=F:T%(I%,2)=G:NEXT:FORI%
=1TO2:MOVET%(I%,1),T%(I%,2):NEXT PLOT85
,T%(3,1),T%(3,2):ENDPROC

10MODE5:U=0:S5=0:c=0:f=0 1:A$="" :D=0
:AN$="":B%=0:D%=[illegible]:DIMT%(3,2):n=0
20ONERROR PROCGRAB
30PROCINIT:IF A$ "N" PROCGRAB
40PROCCORSOR:PROCFILL:GOTO40
50DEFPROCLINE:VDU24,0;0;1279;960;28,
0,1,19,0:ENDPROC
60DEFPROCGRAB:INPUT"Set up Y/N/B/L
,A$:IF A$="N" GOTO70 ELSE IF A$ "B" EN
D ELSE IF A$="Y" PROCSTART:PROCCOL:PROC
ABEN:ENDPROC ELSE IFA$ "L" PROCLOAD ELS
E IFA$="S" PROCSAVE
70A=5:B=7:F=390:G 500:N 0:S%=4:L=0:E
NDPROC
80DEFPROCSTART:INPUT"X,Y"T$,U$:IF T$
"E OR U$="E" ENDPROC ELSE IF VAL(T$)<
0 ENDPROC ELSE F VAL(T$):G=VAL(U$):ENDP
ROC
90DEFPROCCOL:INPUT Bgnd mode Col,Mix
,Wipe"m$:IF m$ C m=0 ELSE IF m$="M" m
=1 ELSE IF m$="W" m=2 ELSE IF m$="S" GO
TO110 ELSE m=VAL(m$)
100INPUT Bgnd Cl 3":c$:IF ASC(c$) 12
c BS(c$):GCOLm,c:CLG ELSE c=VAL(c$) G
COLm,c:CLG
110INPUT"FGND Col,Mix,Wipe ,T$:IF T$=
C U=0 ELSE IF T$="M" U=1 ELSE IF T$
"" U=2 ELSE IF T$="S" ENDPROC ELSE U=VA
L(T$)
120GCOLU,I ENDPROC
130DEFPROCABEN INPUT"Area,Den",T$,U$
IF T$="S" OR U$="S" ENDPROC ELSE IF VAL
(T$) <0 ENDPROC ELSE A=VAL(T$):D=VAL(U$
):ENDPROC
140DEFPROCCURSOR
150PROCF:C=INKEY(0)
160IF C=13 ENDPROC ELSE IF C=134 PROC
E:GOTO150 ELSE IF C=84 PROCT ELSE IF C=
135 F=NOT F:GOTO150 ELSE IF C=133 B%=NOT
B%:GOTO150 ELSE IF C=130 R%=NOTR%:GOTO1
50
170IFC 3 VDU16 ELSE IF C=73 PROCI:GOT
O180 ELSE IFC=76 PROCABEN:GOTO150 ELSE
IF C 80 PROCPOLY:ENDPROC ELSE IF C=82
PROCR:GOTO150 ELSE IF C 136 BR=NOTBR:GO
TO150 ELSE IF C=71 PROCCOL
180IF C=7 PROCSTART:GOTO150 ELSE IF
  127 AND C  137 C C 128:GCOLm,C:S5
C:GOTO150 ELSE IFC 65 F=F-A*5:GOTO210
190IFC 68 F=F+A*5:GOTO210 ELSEIF C 88
G=G-A*5:GOTO210 ELSE IF C=87 G=G+A*5:G
OTO210 ELSE IF C=67 F=F+(A*5)/2:G=G+(A*
5)/2:GOTO210 ELSE IF C=137 :PROCA:GOTO1
50

200IF C=81 F=F (A*5)/2:G=G+(A*5)/2:GO
TO210 ELSE IF C=90 F=F (A*5)/2:G=G (A*5
)/2:GOTO210 ELSE IF C=67 F=F+(A*5)/2:G
G (A*5)/2:GOTO210 ELSE IF C=83 GOTO210
ELSE GOTO150
210IF F>1279 F=0 ELSE IF F<0 F=1279
```



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Open Forum

Sandy Shore

on Spectrum

Following the publication of *Garden* in *Popular Computing Weekly* is seemed that there may be some public interest in active pictures for microcomputers. This one shows a random headland and island, together with waves breaking upon a sandy shore. The scene changes every so often.

Such pictures could be used as sales points in shops, restaurants and other commercial premises. Very crude machines giving a moving text message sell for well over the cost of a 16K Spectrum.

Program notes

Lines 1 to 232	Are initialisation and a short subroutine to
Lines 10 to 20	Generate a random character r$ which is either a underline or a space.
Lines 104 to 170	Set the horizon and draw in the headland.
Lines 180 to 230	Draw in the island.
Line 232	Prints the shore. The £ should be #
Lines 300 to 300	Are the waves
Lines 250 to 254	Set them up
Lines 255 to 300	Keep them lapping for 100 cycles
Line 310	Repeats the program with another scene.
Line 999	Is a line to re-set the ink and paper to suitable colours for program development.

```
  1 GO TO 100
 10 LET r$=" ": IF RND<.3 THEN
LET r$="_"
 20 RETURN
 50 REM "Sandy  Shore"  is  (c)
Reeves Telecommunications Labor-
atories  Ltd  1982.
100 BORDER 7: PAPER 1: CLS
101 RANDOMIZE
102 DIM a$(5,32)
104 FOR n=1 TO 5: LET a$(n)=""
110 LET horizon=7*RND
120 LET pointstart=40*RND+120
131 LET pointend=16*RND+70
140 FOR n=0 TO horizon: PRINT A
T n,0; PAPER 5;"
                 ": NEXT n
145 FOR n=1 TO RND*20+34
150 PLOT 0,pointstart-n: DRAW
INK 4;pointend,0
160 LET pointend=pointend+RND*4

170 NEXT n
180 LET islandx=RND*100+50
190 LET islandy=RND*(140-8*hori
zon)+40
191 LET islandinc=RND*10
200 FOR f=1 TO 10+10*RND
210 PLOT islandx,islandy-f: DRA
W  INK 4;islandinc,0
220 LET rand=RND*10: LET island
x=islandx-rand: LET islandinc=is
landinc+rand+RND*10
230 NEXT f
232 PRINT £1;AT 0,0; PAPER 6;"

240 REM waves
250 FOR n=1 TO 5
252 FOR f=1 TO 32: GO SUB 10: L
ET a$(n,f)=r$: NEXT f
254 NEXT f: NEXT n
255 FOR h=0 TO 100
260 FOR n=17 TO 21: PRINT  BRIG
HT 1;AT n,0; INK 7;a$(n-16): BEE
P .005,0.001: NEXT n
290 FOR n=5 TO 2 STEP -1: LET a
$(n)=a$(n-1): NEXT n
295 FOR f=1 TO 32: GO SUB 10: L
ET a$(1,f)=r$: NEXT f
300 NEXT h
310 RUN
999 BORDER 7: PAPER 7: INK 0
```

Sandy Shore
by John de Rivaz

Microradio

GW6JJN

Morse the pity

There is news this week regarding a new improved Radio Teletype interface for the Spectrum computer which incorporates all that is required to operate RTTY with the Spectrum. The interface and the driving software have been developed in conjunction with the Sinclair Amateur Radio Users Group (SARUG) at 3 Red House Lane, Leiston, Suffolk. Please enclose a stamped addressed envelope if you want a reply. The interface is available either complete or as a printed-circuit board and instructions. Since I am in the process of constructing one, I will say no more for now and bring you a blow-by-blow account of the construction as well as a full review of the unit in use. It looks like it's going to be fun. More anon.

Good news for owners of the Vic 20 computer. JEP Electronics of 4 Houseman Walk, Kidderminster, have produced a morse code reader which works very well. If you have a radio capable of receiving morse, then load up your Vic and listen to the world. If you have no Vic, then, never fear JEP Electronics do the same thing for the Spectrum and the ZX81.

I'm always pleased to hear of readers of the column who have decided to write their own software and make a good job of it as well. Jim Warner G6LTR is one such person and he has produced a fine morse code tutor program which is available for a fiver from Jim at 39 Craddock Road, Clarendon Park, Leicester, LE2 1TD. Jim has also written a database type program called *Callsign Directory*. Details from Jim at the above address. Another reader, Mike Wooding G81QM of 3 Perkings Grove, Rugby, Warwicks, BV21 4HU writes in with news of a program for the ZX81 which turns the computer into an eight column by five rows character generator for amateur television. Mike says he will send the program free to anyone who sends him either ten blank cassettes or a roll of ZX printer paper. Obviously there is still a place for barter in a high-tech world.

I am in the process of compiling a complete list of radio and /electronics software available for any computer, soon to be published in Microradios so if anyone has any software they would like to see included, then please let me know.

Finally, a couple of quickies. Mark Purcell of Bletchley, Milton Keynes asks if digital information can be sent over Citizens Band. The simple answer is no, not legally. The CB allocation is licensed for voice only. You do not need a license to receive digital, RTTY or morse transmissions on any band.

If you want to transmit these signals then you can do so on the amateur bands which requires a licence from the Department of Trade and Industry. S Woodbury of Bromsgrove wants a Dragon Basi code Program. Contact Grosvenor Software, 22 Grosvenor Road, Sussex BN25 2BS

Ray Berry BW055N

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share, or topics that you would like to see covered, write to Ray Berry, Microradio, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD

Open Forum

Scrap Yard

on Vic20

Scrap Yard was written for the unexpanded Vic20

The game requires skill and judgement, rather than pure fire-power

You control the jib of a crane in a scrap yard, picking up and lowering scrap into a number of different piles.

It's not as easy as it looks. Because the program has been structured in short stages the program runs fast

```
1 REM **************
2 REM **          **
3 REM * SCRAP YARD *
4 REM *            *
5 REM * * * BY * * *
6 REM *            *
7 REM *  S.VERWARD *
8 REM **          **
9 REM **************
10 REM
20 READR IFR>256THEN240
30 POKEM B A=A+1 C=C+B GOTO20
100 DATA28 28 127 42,42 42 42,28
101 DATA255 129 129 141 129 255 129 1 4
102 DATA20 34 65 255 255 255,255,255
103 DATA62 63 126 254 255 119 6 6
104 DATA255 129 195 129,255 129,255 129
105 DATA 1 64 118 246 246 118 64 1
106 DATA255 255 0 0,0 0,255 255
107 DATA60 36 231 129 129 231 36 60 999
200 IFC  28°2THENPRINT"ERROR, DATA ERROR  END
210 POKE36879 2° POKE      255
215 POKE       Ins
220 PRINT       SCRAP YARD
225 PRINT
230 PRINT" YOU HAVE CONTROL OF A CRANE
235 PRINT" WHICH IS IN THE  YARD. ONCE YOU HAVE
    PRESSED THE
240 PRINT" SPACE BAR THE CRANE WILL START.
245 PRINT"WHEN YOU ARE OVER JUNK YOU MUST PRESS THE
    BAR AGAIN TO LOWER"
250 PRINT" THE JIB , HAVE COLLECTED THE CRANE WILL
    RETRACT IT S PATH
255 PRINT" THUS LEAVING    THE FINAL JOB OF
    DROPPING THE    [illegible]  IN IT S CORRECT PILE."
260 PRINT
265 PRINT"
270 PRINT"         IFIFTT"
275 PRINT"              TTTT"
280 PRINT"           PRESS A KEY"
285 FORT 1=1    TEP 1
288 POKE36865 I FORT=1TO20 NEXTI T
290 GETA$ IFA$=""THEN290
300 POKE36869 240
305 PRINT"NOW LOAD MAIN PROGRAM."

5 HC=190 W=50
10 POKE36869 255
20 POKE36879 25
30 POKE36878,15
40 T=7744 1=7765 S=255
50 PRINT"                    CBR "
60 FORZ=1TO19
70 PRINT"                    NEXT
80 PRINT"                    FFFFF"   "
85 PRINT"SCORE"SC    HI"HC
90 FORZ=1TO2 POKE7710+22*Z 160 NEXT
100 FORV=0136+ZTO4
105 FORZ=1TO16
106 X=INT(RND(1)*15)+1
107 Y=INT(RND(1)*16)+5
108 IFPEEK(7680+22*Y+X)<>160THEN106
109 POKE7680+22*Y+X INT(RND(1)*4)+1
110 POKE38400+22*Y+X,2
111 NEXT
120 IFG<>1THENGOSUB500
125 POKE36879,28
```

Baud Walk

Hooking up

Hope you read last week's introductory article about hooking your micro up to the telephone network. *Baud Walk* hopes to keep you in touch with developments in hardware, software and services.

News first. And it's good. It seems BT may be offering a new service next year which will allow micros to get hooked up and use the telephone network at a cheaper rate than normal telephone use

Apparently the system — BitStream — will be on trial at 300/300 baud rate (the bits per second your micro sends and receives data with the appropriate modem) It could open the door to far more neighbourhood bulletin boards if the telephone costs really do drop as they should.

At the moment I'm eagerly awaiting a modem from Concorde to check-out Compunet, Commodore's rival service to Micronet 800 which still appears to be on for a September launch.

Some more hardware news A teletext adaptor has just been released for the Spectrum, and the BBC may well support it with educational telesoftware down-loading The black box costs £143 Full details from OEL Ltd on 0768 66748. The trouble with teletext is you can't talk back to it The bonus, is of course, it's all free, and you can save or print-out pages

Also on the Spectrum front, you can now *rent* a modem together with viewdata and user to user communications software Full details from Prism Microproducts on 01 278 3143 The modem normally costs £99 but can be rented together with a subscription to Prestel Microcomputing for £11 a month.

I trialed onto Prestel and began looking for people to make contact with. First group to cross my path were the Midnight Micronetters They are a special interest group (known as SIG) which you often find within databases. I left them a message arranging an on-line rendevous at 11 30pm — bulletin freaks generally let their micros do the walking late at night and weekends I stayed up late, but no message in reply

Not to be deterred, I left another message on a Timeframe bulletin area — again within Prestel — telling them all about this Popular-article and inviting comments from users They replied some hours later asking me to send the message again — it had fallen foul of data corruption and got garbled (in common parlance the telephone line crackled as I was transmitting the message) I did have some successes though — I saw advice for an Apple club I Mailboxed for more details got a reply within half an hour telling me about the club's activities.

At about this point I started to get concerned about the telephone bill, but was relieved to see that session had only cost me around 23p for just over half-an-hour That is the value of a public network — the ability to dial remote databases on a local code number Bulletin boards can sometimes be more fun but it's often at STD rates.

Reports on bulletin boards will be coming when I get delivery of that 300/300 modem. So watch out for them in the following weeks Also coming will be more news and advice about databases, hardware and software, hacking, junk mail, MUD

Robin Wilkinson

Baud Walk is a new weekly column with news on networking databases, reviews of modems and software and points of contact for information.

Any readers with experience of networking are asked to send their experiences or news of services to Robin Wilkinson, Baud Walk *Popular Computing Weekly* 12 13 Little Newport Street London WC2R 3LD

He can also be contacted on Prestel mailbox 019993727

```
130 POKE36876,255
140 FORZ=1TOW NEXT
150 POKE36876,0
160 GETM$
170 IFA$="" "ANDM<-40RM=-19THEN200
180 POKE1+M,160
190 M=M-1 A=A+1 GOTO120
200 M=M+22 D=D+1 S=S-1
230 GOSUB500
240 IFD=17THENGOSUB900 GOTO1100
250 IFPEEK(1+M+22)<>160THEN540
260 POKE36874,5
265 POKE36874,29
270 FORZ=1TOW NEXT
280 POKE36874,0 GOTO200
500 POKE1+M,7 POKE30464+M,0
510 POKE1+M,0 POKE30496+M,0
530 RETURN
540 B=PEEK(I+M+22)
550 FORZ=0TOD
555 POKE36879,29
560 POKE1+M,0
570 POKE36876,INT(RND(1)*128)+128
580 POKE1+M+22,B
590 POKE30406+M+22,2
600 FORJ=1TOW NEXTJ
610 POKE36876,0
620 POKE1+M+22,160
630 M=M-22 NEXT
640 FORZ=1TOA+1
650 POKE1+M,0
660 POKE1+M+22,B
670 POKE30406+M+22,2
680 GETA$ IFA$=" "ANDM>-26THEN760
690 POKE36876,220
695 POKE36879,30
700 FORJ=1TOW NEXTJ
710 POKE36876,0
720 POKE1+M,160
730 POKE1+M+22,160
740 M=M+1
750 NEXT
760 IFM+B<>-21THENGOSUB900 GOTO1100
770 M=M+22 FORZ=1TO16
780 IFPEEK(I+M+22)=0THEN860
790 POKEI+M,8
800 POKE30406+M,2
810 POKE36877,S
815 POKE36878,31
820 FORT=1TOW NEXT
825 POKE36879,25
830 POKE36877,0
840 POKEI+M,160
850 M=M+22 S=S-1 NEXT
860 POKEI+M,8
870 POKE30486+M,2
880 PRINT"[illegible]"
885 S=255 A=0 M=0 D=0 W=W-2 P=P+1
    IFW<0THENW=0
890 IFP<>16THEN120
895 GOSUB900 A=0 M=0 D=0 P=0
    S=0 GOTO10
900 FORZ=1TO4
910 P=PEEK(8114-U+Z)
930 IFP=160THENGOSUB950 U=0
    NEXTZ RETURN
940 U=U+22 GOTO910
950 IFU=0THENRETURN
960 FORO=(U-22)TO0STEP-22
970 POKE8114-U+Z,160
980 FORV=8136+ZTO8141
990 POKEV,(S-Z)
1000 POKEV+30720,2
1010 FORC=1TO20
1020 POKE36876,INT(RND(1)
    *128+128) NEXTC
1030 POKE36879,25+INT(RND(1)*7)
1040 POKE36876,0
1050 POKEV,160 NEXTV
1060 POKE36879,25
1070 SC=SC+10*Z
1080 PRINT"SCORE"SC"   HI HC NEXT
1090 RETURN
1100 I=15 FORT=38TO153
1110 POKE36865,T
1120 POKE36878,I POKE36877,255
1130 I=I-.1 NEXTT
1135 POKE36878,240
1140 PRINT"OH DEAR!!" PRINT
    "YOUR JUDGEMENT FAILED",
1150 PRINT"AFTER YOU HAD MANAGED
    TO SCORE"SC"POINTS"
1160 PRINT"ON THE
    SCRAP-YARD!!."
1170 IFSC>HCTHENPRINT"HOWEVER
    YOU DID BEAT THE OLD HI SCORE"
1174 IFSC>HCTHENPRINT"BY"SC-HC","
    HC=SC
1180 POKE36865,T
1190 FORT=153TO38STEP-1
1200 POKE36865,T
1210 FORI=1TO30 NEXTI,T
1215 POKE36877,0
1220 PRINT"ANOTHER GO?(Y/N)"
1230 GETA$ IFA$="N"THENPRINT
    "OK!!" END
1240 IFA$="Y"THEN1260
1250 POKE36879,25+INT
    (RND(1)*7) GOTO1230
1260 SC=0 P=0 M=0 D=0 A=0
    D=0 W=50 GOTO10
```

Scrap Yard
by S Veryerd

Arcade Avenue

First stage

Time to look at Spectrum games, hints and tips that have been sent in. Owners of other micros seem much less willing to reveal their secrets — why not tell us all about *Blagger*, *Ugh!* and the like?

First comes a letter from P Cash of Weybridge who writes concerning *Zaxxon* from Starzone. "Getting through the first stage is much easier if, rather than moving your sights all over the place, you line up with the clouds on the level where the lowest planes fly in. You will find that the vast majority of the enemy, as well as the Exetron missiles, can be hit by moving just left and right. Planes that come in above can be shot as they fly down to attack the refugees. On the second screen position the sights at the horizon. This way you can collect high scores without damage until later levels where two enemy types attack at once."

On to another flight game — Alan Simms of Crewe says that the safe way to score points in *TLL* by Vortex is to "use the planes shadow to find a flying circle that passes you over the target and avoids obstacles. You then lower the planes height and score the points. On later screens the targets become more confined and you must use the wraparound effect of the map to find a safe approach line. To land for refuelling fly the plane from right to left using the altimeter to bring you down to almost ground level after passing the tree covered island. When the runway appears gently lower the plane the final distance. It will still travel some distance on the ground which is why you need to be already low."

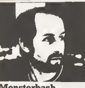
With regard to Crystal's *Halls of the Things*, he says "I was very upset to collect all seven rings and score 1287 points only to be polished off on the lower screen which requires completely different tactics. I advise people to practise this level by pressing *2* and *Space*. Once in you cannot leave so run quickly from left to right to our distance attack, pressing *fire* and *keep* to clear boulders and bottles in your path. Check status frequently. After 30 seconds or so — if you live — you will have cleared the lower area and can work your way up to find the key. Fire arrows up the left- and right-hand walls because things creep down here. You will always be hit, so if you have high wounds when you enter you really have no chance.

In Artic's *Mr Wong* you get maximum points for starching the chasing monster rather than collecting all the clothes. I suggest you stay on the lowest level, which has only two pursuers, until you have collected enough points to get some extra lives.

"Finally the most maddening game I have ever played is *Tribble Trouble* from Software Projects. To complete the first level the best tip is to keep returning the tribbles to the ship as soon as they emerge. When the game begins, move right immediately to catch the first tribble. For anyone stuck on level three, don't worry — it is much harder than the later two. Head butt the spheroid to the right and send the tribbles to the left before laying the tin-tack. If the ball misses the tack run quickly back to the left to protect the tribble. Practice and patience will get you through."

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to Tony Kendle, Arcade Avenue, Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD

Tony Bridge's Adventure Corner



Monsterbash

Those adventurers lucky enough to own a Commodore 64 are thrice-blessed — not only are they able to mess about with one of the best machines on the market today, with a wealth of fantastic software from both sides of the Atlantic but they are also able to play a couple of great adventures (among many others of course) — *Zork I*, and *Heroes of Karn*.

Zork I, the first part of the great trilogy, must not be missed. Until now it has been horrendously expensive at £35 or so, but now it has been re-priced at just £11.99, albeit on disc only (as are all the other Infocom titles) If you're at all interested in adventures, buy it, buy it ...

The second adventure is home-grown, and I include it here because many people have written to me about it over the months The program is *Heroes of Karn*, from Interceptor and I am told that it is "atmospheric and graphically rewarding" — this remark from Tom, of Richmond, North Yorks (Tom offers his help on 0748-4090)

The game's object is to find the four eponymous heroes. This is achieved in various ways. Use the list of words at the foot of this week's *Corner* to see how to rescue each hero

BEREN 12-6-13
ISTAR 40-15-18-4-23
HADLIR 28-10-42-36-20-29-8
KHADIM 28-34-42-9-1-24-38-16-30

Now for some general tips.

To get past the Lizard 26-21-7
To get past the Guard 37-13-3
The Pirate? 31-11-13-14-5-35-33-10-11-13-14-19
To get past the Spider 41-31-43-22.
To get past the Bear 37-13-45

The Ring of Darkness, from Wintersoft was, for many months, only available for the Dragon, but has now been implemented on the Spectrum and other micros, thus gaining a whole new audience I haven't these new versions for myself, yet but, judging from your letters, it is very similar to a favourite of mine from America, the *Ultima* series by Lord British. Both consist of a graphic, scrolling map around which the player moves The US version is a little more ambitious, allowing the player to define and save many characters to disc, and then use up to four in a party

The Ring has been discussed many times in various places, so I won't go into detail here — but see John Scriven's mini review in the *Corner* way back in July last year (Vol 2 No 27 he liked it!) Briefly, the adventurer has to equip him/herself with weapons and armour and then go forth to collect experience, Hit Points, gold and all the usual stuff on the way to finding four rings, and then, The Ring itself

Neil Scrimgour, writing to me in the *Corner* of March 22 was struggling a bit with the program, finding that he couldn't gain enough gold and experience to progress Tony Treadwall has written to assure him that all is well. In fact, says Tony, to amass experience and so on, the intrepid traveller has to venture into the lower levels (though not too far, for your character will not be able to withstand the attacks of some of the monsters further down) until sufficient treasure and combat experience have been amassed. As soon as your Hit Points get a bit low, move upward very quickly Upon reaching the exit, you will gain extra Hit Points and also be able to afford better weapons and armour

Geoff Haydock, on the other hand, reckons that it is better to first of all enter one of the towns and find the dungeon where the Princess is kept. If the jester says he has the key, then kill him and grab it, quickly getting to the dungeon's entrance, thus freeing the Princess. Although, says Geoff, you will now be killed, you'll find, upon reincarnation, that you now have lots of points and can buy anything you want — then you can have a real monster-bash!

D G Spiller had much the same to say about this adventure, going into more detail about the endgame. In common with the others, the buying routine was found to be extremely slow and repetitive, saying that it would be better to be asked by the program "How many of this item?" rather than having to go through the whole selection routine for each spell or article When you want 50 of one kind of spell, you will need a strong typing finger

D Spiller finishes with a list of adventures for the Dragon that he has completed. "*Ring of Darkness*" 9/10 *Pettigrew's Diary* (Shards Software) 8/10 — very good, but, as it is in Basic, too much of a temptation to cheat! *Madness and Minatour* (Dragon Data) 7/10 — a complex but very frustrating game, mainly as progress cannot be 'saved I still haven't scored more than 55 out of a possible 290 Too much dependence on chance — recommended for those with a high tolerance level *Quest* (Dragon Data) 3/10 (and I'm being generous) — very boring and almost totally random (value for money 1/10) *Transylvanian Tower* (Richard Shepherd) 3/10 — not too bad, but no skill involved. More suited, perhaps, to the 12-15 year-old. *Super Spy* (Richard Shepherd again) only took 2 hours to solve, but I did like it enough to complete it, unlike *Transylvanian Tower* — an 5 6/10 *Pimania* (Automata) 6/10 — imaginative concept, and the prize probably just makes it worth the price I think I could solve it, but random elements stand in the way though this is acceptable considering the prize

"I really feel left out, not being able to have a bash at *The Hobbit* or *Valhalla* — is there any chance of them being converted to the Dragon?

A couple of weeks ago, I categorically stated that there was absolutely no chance that *Lord of the Rings* would ever make an appearance on a home micro — in the same issue the news story broke that Melbourne House had finally got the rights to the book! So, I hesitate to say that the two programs will not be converted. Even so, considering the state of the Dragon at the moment, I would think it unlikely

Code words: 1 Golden, 2 Bag; 3 Flag 4 Crystal, 5 Start, 6 The, 7 Surrounding 8 Anything 9 Play 10 Istar 11 Kill, 12 Kiss; 13 Him, 14 Near 15 Flute 16 Open, 17 Wants; 18 In, 19 End. 20 Vampire 21 Of 22 Music 23 Room, 24 Lyre, 25 He 26 Think; 27 Pirate 28 Tell, 29 With, 30 Chest, 31 Don't; 32 Wave 33 Let 34 Hadlir 35 But; 36 Attack; 37 Give 38 And; 39 Wand, 40 Play; 41 They; 42 To, 43 Lake, 44 At; and 45 Honey

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter So if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further write to Tony Bridge Adventure Corner, *Popular Computing Weekly* 12-13 Little Newport Street, London WC2R 3LD.

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No Software

K Kauter of Basildon, Essex, writes.

Q **At Christmas I acquired a computer. The main difficulty I find with it is the software (or lack of it). I have enquired in a number of shops, which stock Vic 20, Electron etc software, but with no sign or anything for the Aquarius. Surely with all the publicity that was given this computer at Christmas time there should be by now more software available.**

I would be grateful for any advice you can give me.

A The Aquarius has suffered from the cut-throat competition for space on the software shelves. As it did not make a major impact in the market it lost out in the software stakes. Also, the decision by Mattel to drop the machine did nothing for it's popularity with retailers or software houses.

Do not lose heart however, Radofin Electronics who manufacture the Aquarius and are committed to its continued development. My advice is to write to them asking for the address of your nearest stockist of Aquarius computers as they will also stock the software. Radofin's address is: Radofin Electronics (UK) Ltd, Hyde House, London NW9 6LG

Fall foul

W M Dunn of Leeds writes.

Q **I would be grateful if you could supply information on the subject of copyright, which I find both baffling and controversial.**

My employer allows us the use of a social club for computing activities, and we would wish neither individually, nor collectively to compromise him by unwittingly falling foul on problems connected with copyright.

My enquiry falls into 2 categories: 1) Printed articles which are published in computer magazines. Are we in breach of copyright by circulating copies of these magazines? 2) Cassettes. Is the copying (not for personal gain, but for general interest) again placing us in breach of copyright?

A I appreciate your problem Mr Dunn, I'll try and answer as best I can.

It all depends on scale. There is nothing wrong with swaping a magazine with a couple of friends. On the other hand any publisher is going to take a dim view if you start photocopying whole magazines and circulating them to fifty people.

You have to distinguish between what might be considered reasonable or not.

What you must not do is to reproduce articles contained in the magazines for submission to, or inclusion in, any other publication.

Your second question concerned the copying of software tapes, and is much easier to answer. You are in breach of copyright if you copy software and either give or sell it to another person. Whilst I sympathise with you as the law stands you would be breaking the law if you either copied tapes yourself, or accepted copied tapes from someone else.

You might be interested to know that anyone who uses a video recorder to record a TV programme, to be watched at a later date, is technically in breach of copyright. Also, recording radio programs, or taping someone else's record collection is a breach of copyright.

It is largely due to these commonplace breaches in the regulations that the copyright laws in this country are held in so little regard.

Stringing

Philip D'Abell of Hucknall, Notts writes:

Q **I am having problems stringing together some *Load* " statements on my Spectrum. Firstly I want to load a character set which is machine-code, so it is a *Load* " Code instruction. Secondly I want to load a picture, so it's *Load* " *Screen*. Lastly I want to load the main Basic program, which requires *Load* ". How can I string these together so that the user need only type in one *Load* statement?**

A In order to achieve the desired effect you will need another program. This will be loaded first and its function will be to load the other three parts of your program. The statements below show an example of such a 'loader' program.

```
10 CLEAR 50000(clears sufficient
               memory for the
               machine code
20 LOAD " "    (loads machine-
  CODE         code)
20 LOAD " "    (loads the
  SCREEN       picture)
40 LOAD " "    (loads the main
               program)
```

Two final points: why not load the picture before the machine code and make the main Basic program auto-run by saving using the *Line* option as described in the Spectrum manual.

Amstrad

Lee Madden of Leeds, West Yorkshire writes:

Q **I am considering buying an Amstrad CPC 64 personal computer, but before I do I'd like to ask you the following questions.**

I am buying the model with the cheaper, green monitor. Will this in any way, other than in the colour sense, impair it's capabilities or restrict the software I can use?

Is there a software company that writes software for this computer, and of what standard is the software?

A The use of the green monitor should not in any way affect the machine's capabilities or restrict your choice of software.

A number of the leading software companies (both games and business) are working on programs for the Amstrad.

The standard of software that I have seen so far is very good, and compares very favourably with that of the existing top sellers — Sinclair, Commodore and Acorn.

Smart move

A Vun from Oxford writes.

Q **I have just bought a Smith Corona TP1 printer for my Commodore 64. It works well with *Easyscript*, but when I use it with *Practicalc* (disc version), I just can't get it to print. I rang the hotline of Dataplus where I bought the printer and I was told they had not even heard of *Practicalc*, let alone were able to give me any advice. Please can you help?**

A Ram Electronics market a CBM 64 Centronics Printer Interface which is compatible with your printer and the two software packages you mention. The interface takes the form of a 'smart cartridge' (their words not mine), which plugs into the user port. It costs £49.95, and is available from RAM at 106 Fleet Road, Fleet, Hants GU13 8PA.

A ribbon cable version is also available, but this requires a software tape to be used as well. This costs about £23.50 and is also available from RAM.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, *PCW*, 12-13 Little Newport Street, London WC2R 3LD

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WANTED Good condition basic ZX80, Z81 Will pay £8 for ZX80 or £10 for ZX81 or swap for six Spectrum originals which cost me £30 Tel Steve on Coventry (0203) 418806

WANTED Original Acornsoft programs (tapes or disks) for BBC Any other manufacturer's tapes disks or ROMs also wanted Tel (05827) 89552

NON WORKING computer wanted any make except ZX81 Any condition also printers memory etc. Cash waiting What have you? Tel Chris on Birmingham (021) 328 4474

HARDWARE hackers Exchange my Nascom two 32K 19 inch rack system keyboard P S K unelated but believed working for ZX81 with Eprom programmer speech synth keyboards printers etc or similar Tel Preston 864589

DRAGON 32 software wanted Originals only Will pay £2 50 per tape Tel Reading 475826 after 4pm

SWAP Vic 20 starter pack + chess cartridge + software + handbook As new for 48K Spectrum or sell for £85 Tel Longridge 4570 (Preston)

ADVENTURE HELPLINE

Lords of Time on BBC B. 1) What do you pay the barman with for the barrel of ale? 2) What use is the Bureau de change, Android and Grout, and also how do you pick up the star in cog7 and get into the starship? 3) How do you get the coin off the compost heap in cog 1 in the garden, and how do you kill the lion and the gladiator in cog 8? 4) What use is the dragon in the copse cog 5, And how do you get past the snow tiger? Andrew Wigmore, 163 High St Rainham, Gillingham Kent.

Snowball on Spectrum. Which buttons in which order do I press on the panel with the coloured buttons? Kevin Allen, 10 Addicott Rd, Weston-super-Mare

Smugglers Cove on Spectrum. With what item do I feed the hungry cat and where do I get this item? Kevin Allen, 10 Addicott Rd, Weston-super-Mar.

The Hobbit on Commodore 64. How do I get out of the goblin's dungeon? Anna Wiggins, 76 Donegore Drive, Antrim, N Ireland.

The Hobbit on Spectrum. How do I get past the elves' magic door after passing the spider? C MacDonald. 135 Fells Rigg, Carmoodean, Livingston.

Heroes of Khan on Commodore 64. I can't seem to get past the phoenix in the Hall of the phoenix or the giant spider in the treasury Lisa Bingley, 49 Logan St, Market Harborough, Leics

Colossal Adventure on BBC B How do you get the chain off the bear? Where is the vending machine? How can you take the lamp in the plover room? Jason Phillips, 242 Queenborough Rd, Halfway, Sheerness Kent.

Invincible Island on Spectrum. How do I get off the island, having found the treasure and evaded the natives? Paul Taylor, 45 Glenarm Crescent, Brant Park, Lincoln.

The Count on Vic 20. I've got the no-doze tablets but am unable to open the coffin before it disappears. Jane Reid, 54 Corbet Close, Hackbridge, Surrey

Grave Robbers on Commodore 64. I can't get beyond the lift room and on the way there my radio vanishes Mrs Pat Porter, Church Lane Cottage, Buckleaham.

The Wizard and the Princess on Atari 800 How can I get across the chasm to get to the cottage at the other side? Chris Heath, 4 Gateway Ave, Oswestry, Salop

The Hobbit on Spectrum. I always get stung by the spider under the waterfall. Anthony Roberts, 75 Tanycoed St, Penrhiwceiber, Mountain Ash, Mid-Glamorgan.

Diary

Event	Venue	Dates	Admission	Organisers
Electron and BBC Micro User Show	UMIST Manchester	Aug 31-Sept 1 10 00am-6.00pm Sept 2 10 00am-4.00pm	£2.00 adults £1.00 children	Database Publications 68, Chester Road Hazel Grove Stockport 061-456 8383
Games Day 84	Royal Horticultural Society's New Hall, Greycoat St London SW1	Sept 1 10 30am-6 00pm Sept 2 10.00am-6.00pm	£1.25	Games Workshop 27/29 Sunbeam Road, London NW10 01-965 3713
Hampshire Computer Fair	Guildhall Southampton	Sept 6 11 00am-6.00pm Sept 7 10 00am 5 00pm	Trade - free Public £2.00	Temwood Exhibitions 0703 31587
Walthamstow 84	Main Exhibition Hall Waltham Forest Technical College Forest Road, London E17	Sept 8th 10.00am 5 00pm	£1 00 adults	London Exhibitions and Promotions 38 Exeter Gdns., Ilford Essex 01-554 8038
ZX Microfair	Alexandra Palace London N22	Sept 8	£1 00 adults 80p children	ZX Microfairs 71 Park Lane London N17 0HG 01-801 9172

New Releases

FLICKER-FREE

Now that all the Spectrum arcade games have to have good-sized sprites there's a battle going on (for second place — Ultimate are still number 1) over who can have the biggest, flicker-free-est, best-designed and least showing of attribute conflict problems.

Micro-Gen's *Automania* must be a front runner. It features Wally Week who is not a period of time but an idiotic character *a la Cuthbert*, and also a beautifully animated 2 inch or so high sprite. Wally is a mechanic and he has to collect various bits of a car from a number of different screens and take them back to the workshop and fit them in place assembling a completed vehicle. There are ten cars to complete altogether.

So you collect things, dodge things, jump up to and across things to complete each car — you have a time limit and three lives. Remind you of anything? The program is subtitled *Manic Mechanic*.

Original no, but the graphics are pretty spectacular and the game is amiably silly and good fun. If you are into the *Miner* school of game then (apart from the money) there's no reason not to go out and buy this one.

Program	*Automania*
Price	*£6.95*
Micro	*Spectrum*
Supplier	*Mikro-Gen* *44 The Broadway* *Bracknell* *Berks.*

UNFUSSY

Educational programs for the Vic20 are fairly few and far between — which is strange considering the way in which the Vic starter pack is sold very much as being suitable for young kids and their parents learning about computers.

Decimals is one such educational program for the Vic. It requires 16K and it's also a conversion of a very well received program on the BBC.

The programme begins with a short test section so that the level of difficulty can be adjusted automatically. That done, the program can cover virtually every area of decimal teaching — multiplication and division, decimal point, etc. Graphics are clear and unfussy and there are revision sections and exercises.

Program	*Decimals*
Price	*£8.25*
Micro	*Vic 20*
Supplier	*Chalksoft* *37 Willowslea Road* *Worcester* *WR3 7QP*

Pick of the week

STARRY-EYED

Star Seeker is an astronomy program that comes with the backing of no less an authority than the Planetarium itself. Pause for gasp. It has been designed for everyone from dabblers to (the blurb suggests) professionals.

Actually *Star Seeker* is essentially two programs, *Star Seeker* proper and *Solar System*. *Star Seeker* enables you to see the stars at any place and at any time. From this, using a cursor any star can be pinpointed and additional information about it discovered.

What this means, in practice, is that you can use this program to find out what you can see in the real world, ie, the sky above your head. This intrusion of reality into the world of computer software can only be a good thing, although what effect fresh air will have on sickly white computer owners I dread to think.

The second program, *Solar System*, gives you visual information on the planets and such things as Haley's Comet. It can plot orbits, flight paths, etc, and using a similar cross-wire system to *Star Seeker*, can provide lots of background information on each heavenly body. The whole thing comes with an excellent explanatory manual and if you have even the slightest interest in astronomy then this is for you.

Program	*Star Seeker*
Price	*£9.95*
Micro	*BBC*
Supplier	*Mirror Soft* *Holborn Circus* *London* *EC1P 1DQ*

MORTAL REMAINS

Rapscallion is the latest release from Bug-Byte. It is a multi-screen cartoon-style arcade/adventure roughly in the style of *Alchemist* and *Atic Atac* but with many special features of its own.

The idea is that you have been captured by the wicked and evil Rapscallion and imprisoned in a dungeon whilst he takes possession of your castle. All is not lost. You have a fairy godmother who casts a spell that turns you into a bird or a fly, and off you set to do battle and regain your premises.

There are three stages to game; in the first you are in the Wilderness looking for the key to the Magic Labyrinth — the Wilderness consists of a large number of totally bizarre rooms in which occasional useful objects are to be found — these feature such diverse paraphenalia as tennis players, high voltage generators, cats, trains, viaducts and furnaces all of which are contrived to bash, bump, zap, blast, squelch and batter you unless you are very careful indeed. Choosing your form, fly or bird, is part of the equation.

If you get killed you become a ghost — in this transient form you can do nothing but wander from room to room trying to find your mortal remains — this will let you start again. From the Wilderness you pass (assuming you have the right objects) to the Magic Labyrinth (find the Pixie with the magic eye) and eventually on to the Castle where, by some amazingly complicated set of procedures, you may discover the magic wand with which to defeat Rapscallion himself.

Graphically the game is somewhat peculiar — some of the shapes are in your normal sprite hi-res, others are in a mode that, for want of another name you could call teletext, ie, they are constructed out of small blocks. Presumably this is done to save memory space, given the many rooms in the game. It looks a bit off but is, I suppose, not without its own charm.

Whatever else, *Rapscallion* is pretty inventive and will take ages to play. Fans of this kind of game should enjoy it very much.

And it might be the game to put Bug-Byte back into the top of the charts.

Program	*Rapscallion*
Price	*£6.95*
Micro	*Spectrum*
Supplier	*Bug Byte* *Mulberry House* *Canning Place* *Liverpool L1 8JB*

BENEVOLENCE

Mirrorsoft has, of late, concentrated on educational software despite the superb *Caesar the Cat*.

Its next arcade game is *Hi Bouncer* which features those irritating children's characters, the Mr Men, in a multi-screen romp.

Basically you move Mr Bounce around town as he tries to help his friends. In the first screen Mr Bounce has to jump into the air to retrieve Mr Tall's scarf and gloves. In later screens Mr Lazy, Mr Bump and Mr Snow are all rendered assistance via Mr Bounce's benevolence.

Naturally Mr Bounce is hampered in these efforts by various kinds of fruit, occasional puddles and birds which impede his progress.

The various screens require slightly different tactics from each other, but like *Manic Miner* it's really a matter of knowing where and when to jump. The levels range from easy enough for most beginners to astonishingly difficult. If the tweeness doesn't put you off, you should find it a pretty captivating game. One nice additional touch is a sort of 'absolute idiot' level where you can practise the screens — also suitable for very young children.

Program	*Hi Bouncer*
Price	*£7.95*
Micro	*BBC*
Supplier	*Mirrorsoft Holborn Circus London EC1P 1DQ.*

PRETTY SLICK

Blue Thunder was a pretty slick battle-against-all-odds game that did well on the Atari and was successful on the Spectrum. Now the Commodore version has been released.

The game is rather like *Penetrator* by Melbourne House in that you fly your plane (in this case helicopter) past a host of obstacles like electronic storms, missiles, fighters and radioactive clouds to, eventually, a nuclear reactor which you must destroy.

Obviously, completing the whole thing is unbelievably difficult, so there are various options to play the game at different levels, although the nuclear blast is reserved for those who do the thing properly.

Obviously, nuclear destruction is a thing to be cherished only once.

Program	*Blue Thunder*
Price	*£6.95*
Micro	*Commodore 64*
Supplier	*Foundry Business Systems 2 Station Road Hammerwich Walsall West Midlands*

SLOGANS

Bill board is a message display program intended for small shops and businesses which runs on a 48K Spectrum. As the manufacturers point out, this makes it cheaper to install, even including the price of a second hand colour TV rather than conventional commercial slogan machines.

As a shopkeeper, you have little control over the exact nature of the display — the computer treats it in a random sort of way each time. What you do control is the words on the screen simply inserting your appropriate message — up to 200 characters in total.

The instructions for use are simple, simpler in fact than most arcade games. The company suggest you could keep up to 1 000 different messages on tape and load them up — I'd have thought a microdrive version could be a good idea and have it load itself.

Program	*Billboard*
Price	*£7.95*
Micro	*Spectrum*
Supplier	*Orange Enterprises 20 Badby Road Daventry Northants NN11 4AP*

CASTAWAY

Crusoe is the latest game from the unique breeding grounds that are Automata's software laboratories.

The gosh wiz factor with this one is that after a number of arcade games it is an adventure — although very different from such unique creations as *Pimania* and *Groucho*.

Crusoe is machine-code for one thing and vaguely like some other adventures for another. It reminds me of Wintersoft's *Ring of Darkness*. The screen is divided into three sections, a status area, a text command section and a graphics section which has a scrolling 'map' of the island with animated creatures that wander about. And, of course, your little man representing *Crusoe* who is also animated — press E for east and he walks to the character square to the east.

On the map are a number of useful, useless and fatal objects — you can take, drop, ignore these via the conventional adventure syntax typed into the keyboard. There are 75 hidden objects to be discovered as you look around the island. Many of the conundrums of conventional adventures are present — you'll need to find some boots before you can walk over some of the terrain, equally if you issue some commands whilst you're swimming ... well, guess.

Although the graphics are small some of the animation is nice and the total adventure looks fiendishly difficult.

Program	*Crusoe*
Price	*£6*
Micro	*Spectrum*
Supplier	*Automata 27 Highland Road Portsmouth Hants PO4 9DA*

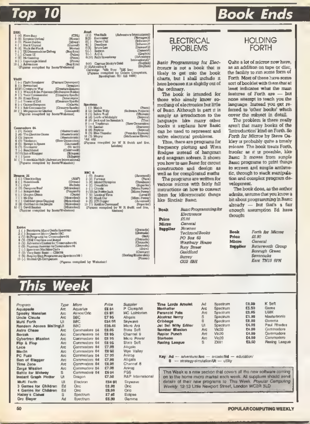
BAGS OF GOLD

Listen, if you think I'm going to get enthusiastic about a maze game in which you move around a maze picking up bags of gold and avoiding maze monsters then you've got your monadic operators in a glitch.

What I can get, if not enthusiastic about at least a little less than totally bored by, is the fact that *Maze of Gold* is for the unexpanded Vic 20. Despite everything anyone says about this unique machine in the computer press the punters don't care and are still buying it complete with starter pack.

Recently, games for the machine have all but dried up and, having compassion for new Starter Pack people, I feel any new game for the Vic, particularly if it is able to work on the unexpanded machine, should be supported. For a while anyway.

Program	*Maze of Gold*
Price	*£5.95*
Micro	*Vic20*
Supplier	*Visions 1 Felgate Mews Studland Street London W6 9JT*



Top 10

ZX81
1 (4) Alien Base (CRL)
2 (2) Krypton Ordeal (Novus)
3 (3) Planet Raider (Silversoft)
4 ( ) Black Crystal (Carnell)
5 (6) Walk the Plank (Novus)
6 ( ) 3X Dimensional Debug (Bug Byte)
7 ( ) Chess 1K (Psion)
8 (6) Mothership (Psion)
9 ( ) Espionage Island (Psion)
10 ( ) Adventure (Bug Byte)
(Figures compiled by Boots/Websters)

Vic20
1 (–) Flight Simulator (Ferranti Davenport)
2 (1) Bewitched (Imagine)
3 (10) Computer War (Creature Spanners)
4 ( ) Wizard & the Princess (Melbourne Rabbit)
5 ( ) Tank Commander (Creature Sparks)
6 (9) Krazy Kong (Interceptor)
7 (–) Tower of Evil (Creature Sparks)
8 (–) Games Designer (Galactic)
9 ( ) Sub-Commander (Creature Sparks)
10 ( ) Megaxploder Llamas (Llamasoft)
(Figures compiled by Boots/Websters)

Commodore 64
1 (1) Revolt (Mastertronic)
2 (4) The Election Game (Mastertronic)
3 (3) Square (Mastertronic)
4 (1) Trashman (New Generation)
5 (1) Revenge in Space (Llamasoft)
6 (7) Encounter (Hi tech)
7 (–) Beachhead (Commsoft)
8 (10) Son of Blagger (Alligata)
9 ( ) Loco (Alligata)
10 ( ) Incredible Hulk (Adventure International)
(Figures compiled by Boots/Websters)

Atari
1 (1) The Hulk (Adventure International)
2 (2) Encounter (Novagen)‡
3 ( ) Planet Fall (Infocom)†
4 ( ) Deadline (Infocom)†
5 (3) Bruce Lee (Datasoft)‡
6 (–) Zaxxon (Datasoft)
7 (–) A.C.E. (English)
8 (10) Rally Speedway (Adventure International)*
9 (4) Captain Sticky's Gold (English)
10 (5) Airstrike II (English)
Cartridge †48k Disc ‡32K Disc
(Figures compiled by Celsis Computers, Basingstoke (0) 1 3 9488)

Spectrum
1 (1) Match (Psion)
2 (2) Jet Set Willy (Software Projects)
3 (1) Sabre Wulf (Ultimate)
4 (4) Lords of Midnight (Beyond)
5 (5) Jack and the Beanstalk (Thor)
6 (—) Trashman (New Generation)
7 (9) Kosmic (Starzone)
8 (8) Psytron (Beyond)
9 (3) Blue Thunder (Foundry Systems)
10 (7) Mugsy (Melbourne House)
*All 48K
(Figures compiled by W H Smith and Son, London)

Dragon 32
1 (–) Chuckie Egg (A&F)
2 ( ) Hunchback (Ocean)
3 ( ) Ugh! (Softek)
4 (7) Dungeon Raid (Microdeal)
5 (–) Buzzard Bait (Pearsoft)
6 ( ) Dragon Chess (Oasis)
7 ( ) Mr Dig (Microdeal)
8 ( ) Cuthbert goes Digging (Microdeal)
9 (8) Cuthbert in the Jungle (Microdeal)
10 ( ) Devil Assault (Microdeal)
(Figures compiled by Boots/Websters)

BBC B
1 (3) Aviator (Acornsoft)
2 (2) Fortress (Pace)
3 (4) Island Olympics (Database)
4 (1) Overdrive (Superior)
5 ( ) Chuckie (Micro Power)
6 (10) Jet Boot Jack (Micro Power)
7 (9) Lords of Time (Level 9)
8 (8) Black Car (Micro Power)
9 (5) JCB Digger (Acornsoft)
10 ( ) Spitfire Command (Superior)
(Figures compiled by W H Smith and Son, London)

Books
1 ( ) Beginners Micro Guide Spectrum (Granada)
2 ( ) Beginners Micro Guide BBC (Granada)
3 (1) 64 Programs for Commodore 64 (Bak)
4 (3) CBM Graphics and Sound (Granada)
5 (4) Adventure Games for Commodore 64 (Granada)
6 (7) Program Systems on Commodore 64 (Granada)
7 (–) Spectrum Machine Code (Shiva)
8 (2) Very Basic Basic — CBM 64 (Century)
9 (5) Step by Step Programming Spectrum bk 1 (Dorling Kindersley)
10 (–) Sinclair QL Companion (Pitman)
(Figures compiled by Websters)

Book Ends

ELECTRICAL PROBLEMS

Basic Programming for Electronics is not a book that is likely to get into the book charts, but I shall include it here because it is slightly out of the ordinary.

The book is intended for those who aleady know something of electronics but little of Basic. Although in part it is simply an introduction to the language like many other books it explains how Basic can be used to represent and solve electrical problems.

Thus, there are programs for frequency plotting and Wien Bridges instead of hangman and anagram solvers. It shows you how to use Basic for circuit construction and design as well as for complicated maths.

The programs are written for various micros with fairly full instructions on how to convert them for idiosyncratic things like Sinclair Basic.

Book *Basic Programming for Electronics*
Price *£5.95*
Micro *General*
Supplier *Newnes Technical Books, PO Box 63, Westbury House, Bury Street, Guildford, Surrey GU2 5BH*

HOLDING FORTH

Quite a lot of micros now have, as an addition on tape or disc, the facility to run some form of Forth. Most of these have some sort of booklet with them that at least indicates what the main features of Forth are — but none attempt to teach you the language. Instead you get referred to 'other books' which cover the subject in detail.

The problem is there really aren't that many books of the 'Introduction' kind on Forth. So *Forth for Micros* by Steve Oakley is probably quite a timely release. The book treats Forth, insofar as it is possible, like Basic. It moves from simple Basic programs to print things to screen and simple arithmetic, through to stack manipulation and complex program development.

The book does, as the author admits, assume that you know a bit about programming in Basic already — but that's a fair enough assumption I'd have thought.

Book *Forth for Micros*
Price *£5.50*
Micro *General*
Supplier *Butterworth Group, Borough Green, Sevenoaks, Kent TN15 8PH*

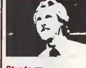
This Week

Program	Type	Micro	Price	Supplier
Aquapede	Arc	Aquarius	£6.64	P Clemens
Spooky Mansion	Arc	Atmos/Oric	£6.95	MC Lothlorien
Uncle Claude	Arc	BBC	£7.95	Alligata
Multi Forth	Ut	BBC	£64.95	Skywave
Random Access Mailing	Ut	BBC	£30.45	Micro Aid
Astro Chase	Arc	Commodore 64	£8.95	State Soft
Berzak	Arc	Commodore 64	£8.95	Channel 8
Cybertron Mission	Arc	Commodore 64	£8.95	Micro Power
Flip & Flop	Arc	Commodore 64	£8.95	State Soft
Loco	Arc	Commodore 64	£7.95	Alligata
Merlin	Arc	Commodore 64	£8.90	Wye Valley
PC Fuzz	Arc	Commodore 64	£7.95	Anirog
Son of Blagger	Arc	Commodore 64	£7.95	Alligata
Time Zone	Arc	Commodore 64	£8.95	Channel 8
Zarga Mission	Arc	Commodore 64	£7.95	Anirog
Battle for Midway	S	Commodore 64	£9.94	PSS
Instant Graph Plotter	Ut	Dragon	£7.50	R&P International
Multi Forth	Ut	Electron	£64.95	Skywave
3 Games for Children	Ed	Oric	£6.95	Oric
4 Games for Children	Ed	Oric	£6.95	Oric
Hailey's Ciahal	S	Spectrum	£7.95	Eclipse
Orc Slayer	Ad	Spectrum	£5.90	Gamma
Time Lords Amulet	Ad	Spectrum	£8.99	K Soft
Madhatter	Arc	Spectrum	£5.50	Game
Paranoid Pete	Arc	Spectrum	£5.95	UBIK
Alcatraz ferry	S	Spectrum	£1.99	Mastertronic
Cribbage	S	Spectrum	£8.80	Gamma
Jet Set Willy Editor	Ut	Spectrum	£4.99	Paul Rhodes
Bomber Mission	Arc	Vic20	£4.99	Commodore
Rapier Punch	Arc	Vic20	£4.99	Commodore
Starbase	Arc	Vic20	£4.99	Commodore
Racing League	S	ZX81	£3.50	Racing League

Key Ad — adventure/Arc — arcade/Ed — education/ S — strategy-simulation/Ut — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to This Week, *Popular Computing Weekly* 12-13 Little Newport Street, London WC2R 3LD

Ziggurat



Strategy

The teaching of mathematics, as with any other subject, is a question of learning both strategy and tactics.

The tactics of solving a problem revolve around remembering expansions, formulae for expressions in calculus, and similar specific aims, about which a lot is taught, and (in some cases) much is learnt in conventional teaching.

The strategy of solving a problem in mathematics revolves around the best way of approaching types of problems, and this is the topic about which little is taught (and less learnt) in conventional teaching.

The anology with chess is direct and intended.

Chess beginners are usually quick to pick up such established *tactics* as 'forks', 'skewers' and 'pins'. However, the importance of *strategy* — for example control of the central squares, or rooks on open files — takes far longer to learn.

This is reflected in mathematics. At an elementary level (say up to A level, and perhaps beyond) mathematical *tactics* are all important, an unfortunate state of affairs which is accentuated by the form of examinations — particularly those with multiple-choice questions, which are all too popular these days.

But, to progress in mathematics (as with many other subjects) the learner has to be given an appreciation of what G H Hardy called (in *A Mathematician's Apology*) 'real mathematics. *Real* mathematics is concerned with mathematical *strategy*.

Not all players make the move from chess to real chess, and some never go from mathematics to real mathematics. Many are left at a mathematical wayside, because, being young, they can grasp the tactics but cannot cope with the more demanding mathematical strategy.

The increasing interest in *Logo* in teaching is due to the way it teaches.

Logo does teach tactics, in that the basic moves are covered, but it also tries to establish a strategical view of learning — how to *solve* problems.

A very important part of learning how to solve a problem (that is, using a strategical mode of thought) is learning from mistakes.

Rather than judging by standards of "right — you get a good grade" and "wrong — you get a bad grade", in *Logo* one asks the question 'How can I fix it?"

Logo is well known for its turtle graphics, its list processing, and its extreme friendliness. All these characteristics derive from the view that education is finding out, learning to live with mistakes, in that life does not end when an error is made. Turtle graphics are an excellent means of showing the progress of series of ideas, list processing enables the deeper investigation of the structure of symbolic worlds, and *Logo* is so friendly because — if you make a tactical mistake — you want as much help as possible to solve that mistake.

Take games writing as just one example of an intellectual exercise. Young writers of computer games are often very good at producing first-class programming effects — they have been taught by conventional teaching to be good at tactics.

But they are not so good at producing a coherent game. This requires strategy, something which is usually only exhibited by the older programmers.

Why should this be? If our teaching methods were different, what sort of games would the young programmers be writing? Better ones, I suspect.

Boris Allan

Puzzle

On the carpet

Puzzle No 119

An eccentric but wily oil-magnet placed the following peculiar order for a carpet for his palace in Arabia.

i) The width, which shall be an exact number of feet shall not be less than ten feet nor greater than ninety nine feet.

ii) The length, which shall also be an exact number of feet, shall be not less than one hundred feet nor greater than nine hundred and ninety-nine feet.

iii) The width and length (in feet) and the area (in square feet) shall be expressible using, between them, each of the ten digits — zero to nine — once and only once.

iv) The length must be a multiple of the width.

But can you determine its dimensions?

Solution to Puzzle No 114

First, the minus one in the evaluation can be disregarded as it will not have the any effect if the evaluation of 2^{132049} came to a one followed by only zeros, which cannot be the case.

To find the number of digits, the program raises two to the required power but to avoid an arithmetic overload, the total is divided periodically by one million (1E6). As this reduces the number of digits by six, a register *D* is incremented by six to keep a tally of this.

```
10 D = 0 20 T = 2 30 FOR N = 1 TO 132049 40 T = T * 2 50
IF T > 1E6 THEN GOSUB 100 60 NEXT N 70 PRINT T, D
80 END 100 T = T/1E6 110 D = D + 6 120 RETURN
```

This gives a result of 5.18748276E18 (*D* = 39732) so we add to *D* the exponent (18) plus one (the non-decimal part of the calculation), giving an answer of 39751 digits. Alternatively using logs to find the answer, the common log of 2, multiplied by 132049 gives a characteristic of 39750 indicating a number with 39751 digits.

Winner of Puzzle No 114

The winner is D Lee, Copenhagen Road, Gillingham, Kent, who receives £10.

Rules

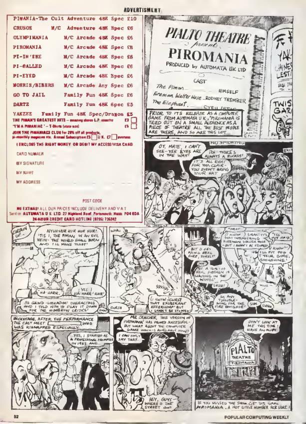
The closing date for entries to Puzzle No 119 is August 24.

The Hackers








PIMANIA-The Cult Adventure 48K Spec £10
CRUSOE M/C Adventure 48K Spec £6
OLYMPIMANIA M/C Arcade 48K Spec £6
PIROMANIA M/C Arcade 48K Spec £6
PI-IN'ERE M/C Arcade 48K Spec £6
PI-BALLED M/C Arcade 48K Spec £6
PI-EYED M/C Arcade 48K Spec £6
MORRIS/BIBERS M/C Arcade Any Spec £6
GO TO JAIL Family Fun 48K Spec £6
DARTZ Family Fun 48K Spec £5
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CAST
The Piman HIMSELF
Fireman Walter Hose ..RODNEY TREMBLER
The Elephant.
PRIOR TO ITS RELEASE AS A COMPUTER GAME FROM AUTOMATA U K, "PIROMANIA IS TRIED OUT ON A SMALL AUDIENCE AS A PIECE OF THEATRE ALL THE BEST PEOPLE ARE THERE, AND SO ARE THIS LOT
NO SMOKING
OY, MATE, I CAN'T SEE — YER EYES ARE IN THE WAY!
TCH THERE'S ALWAYS A RUCKUS!
IT'S ALL RIGHT FOR YOU, CLAIR - YOU DIDN'T BRING YOUR HAT
EXIT
CURTAIN UP -
NYUH-HUR HUR HUR HUR! 'TIS I, THE PIMAN IN AN EVIL VEIN - THE WORLD SHALL BURN AND I'LL MAKE TOAST!
"HA HARR.
YES! HA HARR' HAR'
OH GAWD - LOOKADIM! OVERACTING AND I TOLD HIM TO PLAY IT DOWN FOR THE HIGHBROW CRITICS!
CURSE
SSSSSSS
(I KNOW) CURSE THAT EXUBERANT EFFERLUMP! BUT I SHAN'T BE STOPPED!
"DRAT
(I KNOW) DRAT! IT'S THAT INTERFERING FIREMAN WALTER HOSE - BUT I SHAN'T BE STOPPED
"I'LL PUT PAID"
BUT O GOD USING REAL FIRE, SURELY!
SHH
A TEAM OF REAL FIREMEN IS WAITING IN THE WINGS!
SHUH!
I KNOW"!! I'LL PUT PAID T YOUR GAME, SUNSHINE!
SO, ANY TROUBLE - WING FOR THE FIRE BRIGADE!
SHH
SHHH
BACKSTAGE, AFTER THE PERFORMANCE THE CAST MEET , WHO WAS KIDNAPPED ESPECIALLY
YES, I STARTED AS A PROFESSIONAL PROMPTER IN 1953 AND...
MR CRUCHER, THIS VERSION OF 'PIROMANIA' HAS PROVED SUCCESSFUL - BUT WHAT ABOUT THE COMPUTER GAME WHICH IS AVAILABLE NOW?
I CAN ONLY SAY THAT...
HEY, GUYS - WHERE'D THE STREET GO?
DON'T LOOK AT ME THIS TIME! HAVE AN ALIBI
PIALTO THEATRE
PIROMANIA
IF YOU MISSED THE SHOW GET THE GAME PIROMANIA . A HOT LITTLE NUMBER FER SURE!